



# 76  
Appeal Brief  
PATENT 6-3-05  
P53821C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re Application of:

Appeal No. \_\_\_\_\_

RICHARD G. HYATT, JR.

Serial No.: 08/720,070

Examiner: BARRETT, SUZANNE D.

Filed: 27<sup>th</sup> of September 1996

Art Unit: 3676

For: ELECTROMECHANICAL CYLINDER PLUG

Attn: Board of Patent Appeals & Interferences

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FOURTH APPEAL BRIEF

Paper No. 77

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the *Notification of Non-Compliant Appeal Brief*, Paper No. 03162005 issued on the 17<sup>th</sup> of March 2005, together with the intervening successive progression of changes in the *Code of Federal Regulations* subsequent to the timely filing of Appellant's *Appeal Brief* on the 3<sup>rd</sup> of June 2004, Appellant submits this *Fourth Appeal Brief* pursuant to Appellant's Notice of Appeal filed on the 3<sup>rd</sup> of December 2003, to perfect Appellant's appeal to the Board of Patent Appeals and Interferences from the final rejection of claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 90-100, 105, 106, 108, 109, 111-116, and 119-121.

Folio: P53821C  
Date: 4/18/05:  
I.D. REB/kf

## **I. REAL PARTY IN INTEREST**

Pursuant to 37 CFR §1.192(c)(1)(as amended), and 37 CFR §41.37(c)(1)(i), the real party in interest is:

Richard G. Hyatt, Jr.,

the sole inventor of the subject matter defined by the pending claims.

## **II. RELATED APPEALS AND INTERFERENCES**

37 CFR §41.37(c)(1)(ii) (as amended), Appellant notes that an undocketed appeal in Appellant's co-pending divisional application Serial No. 10/440,308, and may have a bearing on the Board's decision for some of the finally claims pending in this pending appeal.

## **III. STATUS OF CLAIMS**

Pursuant to 37 CFR §41.37(c)(1)(iii) (as amended), the status of the claims is, as follows:

Subsequent to entry of Appellant's Fourth Amendment under 37 C.F.R. §1.116(b) filed on the 25<sup>th</sup> of November 2004, claims 1 through 56, 64 through 84, 90 through 100, 105 through 116 and 119 through 121 are pending in the application. Of the latter claims 1, 6, 11, 14, 25, 43, 46, 56, 64, 65, 70, 75 through 77, and 90 through 92 are independent, whereas the remaining claims are dependent.

Claims 25 through 33, 39 through 42, 55, 78 through 84 and 107 are allowed. Claims 53, 71, 72, 74, 86, 87 and 110 are objected to as dependent upon a rejected claim. Claims 1

through 24, 34 through 38, 46 through 52, 54, 56, 64 through 70, 75 through 77, 90 through 100, 105, 106, 108, 109, 111 through 116, 119 through 121 are rejected.

Claims 43 through 45, 73 and 94 are withdrawn from consideration; claims 57 through 63, 85 through 89, 101 through 104, 117 and 118 have been cancelled.

In compliance with 37 CFR §41.37(c)(1)(viii), a copy of the claims involved in this appeal, as of the filing date of this paper are contained in the Appendix I. One amendment proposing a change of one noun in claim 14 is filed simultaneously with this Appeal Brief. Appendix II, in conformance with 37 CFR §41.37(c)(1)(viii) presents a copy of the claims involved in this appeal as those claims would read upon entry of the amendment filed simultaneously this the Appeal Brief.

#### IV. STATUS OF AMENDMENTS

Pursuant to 37 CFR §41.37(c)(1)(iv), the status of all amendments filed subsequent to the final rejection is, as follows:

No claim amendments were made prior to filing of the present Appeal Brief.

An amendment under 37 C.F.R. §1.116(b) was concurrently submitted with the present Appeal Brief on the 3<sup>rd</sup> of June 2004. In a belatedly issued *Notification Of Non-Compliance* dated on the 17<sup>th</sup> of September 2004, one of three different Papers, all bearing Nos. 09152004, the Examiner stated that the "statement of the status of the claims contained in the brief is incorrect. Since [*sic*] the amendment filed 6/3/04 has not been entered... ."

In response to the *Notification Of Non-Compliance* action issued on 17<sup>th</sup> of September

2004 (one of three separate Paper Nos. 09152004) in reply to the Amendment under 37 C.F.R. §1.116(b) filed on 3 June 2004, Appellant filed a second Amendment under 37 C.F.R. §1.116(b) on 24 September 2004. In the second Amendment under 37 C.F.R. §1.116(b) filed on the 24<sup>th</sup> of September 2004, claims 85 through 89 were canceled without prejudice or disclaimer, and claims 1, 6, 11, 14, 70 and 121 were amended. In a telephone conversation with Appellant's undersigned attorney on the afternoon of Monday, the 18<sup>th</sup> of October 2004, the Examiner stated that the clerical staff of the Office had not yet delivered this Amendment to the Examiner.

Simultaneously with the filing of the Appeal Brief, Appellant filed a third Amendment as an alternative to the second Amendment filed on the 24<sup>th</sup> of September 2004, on the 18<sup>th</sup> of October 2004, as a third Amendment again requesting amendment of claims 1, 6, 11, 14 and 70 to remove typographic errors. One of the three Paper Nos. 09152004 stated that the Examiner was agreeable to entry of these amendments of claims 1, 6, 11 and 70.

Simultaneously with the filing of the Appeal Brief on or about the 25<sup>th</sup> of October 2005, Appellant filed an alternative to the second Amendment filed on the 24<sup>th</sup> of September 2004, as a fourth Amendment (Part I) again requesting amendment of claims 1, 6, 11, 14 and 70 to remove typographic errors, and to additionally request cancellation of claims 85 through 89 and 101 through 104, and as (Part II) requesting correction of typographic errors in claims 56, 75 and 120. One of the three Paper Nos. 09152004 stated that the Examiner was agreeable to entry of these amendments of claims 1, 6, 11 and 70. This simultaneously filed fourth Amendment (Part I) and (Part II) is, other than for the cancellation of claims 101 through 104 and amendment of claims 56, 75 and 120, identical to the third Amendment filed on the 18<sup>th</sup> of October 2004.

Paper No. 11162004, an Advisory Action dated on the 18<sup>th</sup> of November 2004, confirmed entry of parts I and II of Appellant's fourth Amendment filed on the 25<sup>th</sup> of October 2004 under 37 CFR §41.33.

An amendment proposing a change of one noun in claim 14 is filed simultaneously with this Appeal Brief. Appendix II, in conformance with 37 CFR §41.37(c)(1)(viii) presents a copy of the claims involved in this appeal as those claims would read upon entry of the amendment filed simultaneously with the Appeal Brief. The single amendment of claim 14 substitutes the noun "plug" for "mass" and should be acceptable to the Examiner.

Appellant notes however, (i) that the *Consolidated Patent Rules* §§41.1, *et seq.* have an effective date of the 13<sup>th</sup> of September 2004, long subsequent to the timely filing of Appellant's *Notice of Appeal* on the 3<sup>rd</sup> of December 2003 and the timely filing of Appellant's *Appeal Brief* on the 3<sup>rd</sup> of June 2004, and (ii) that the *Consolidated Patent Rules* §§41.1, *et seq.* fail to recognize that the clerical staff of Tech Center 3600 currently requires more than three (3) months to deliver each paper filed by Appellant to the Examiner.

*Inventor*

## V. SUMMARY OF CLAIMED SUBJECT MATTER

Pursuant to 37 CFR §41.37, and referring to Figure 1 through 22 collectively, and page 9, line 20 of the specification, Appellant discloses a hierarchically<sup>1</sup> adaptable lock 100<sup>2</sup> by using

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<sup>1</sup> These hierarchies are particularly illustrated by Figures 19 through 22, and described beginning on page 23, line 4, and continuing through page 24, line 6.

<sup>2</sup> Page 10, lines 1 and 4.

a removable cylindrical plug 101<sup>3</sup> that is rotatably held with a lock cylinder 102<sup>4</sup> of a locking mechanism. The plug has an exposed terminal face base 72<sup>5</sup> perforated by a keyway 101a and a distinct electrical contact aperture 104x. The plug 101 contains either a mechanical locking mechanism, such as a re-keyable tumbler stack 82, and an electrical operator 105,<sup>6</sup> 106, 107, 108,<sup>7</sup> or simply a key retaining mechanism<sup>8</sup> and an electrical operator 105, 106, 107, 108, wholly within the cylindrical exterior surface of the plug 101. The opposite base of the plug operationally supports a tailpiece 101q<sup>9</sup> able to rotate a cam 103<sup>10</sup> and position a bolt of the locking mechanism. Referring additionally to Figure 18,<sup>11</sup> after insertion of a blade of a properly bitted and profiled key 200,<sup>12</sup> electrical power from battery 202, or alternatively electrical power and a data signal from the signal generator superimposed upon the electrical power, may be transmitted from electrical circuits of the key to the electrical operator 106b

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<sup>3</sup> Page 10, lines 6, 11, 13 and 19.

<sup>4</sup> Beginning with page 10, line 4.

<sup>5</sup> Page 10, lines 6 and 7, and page 20, line 16.

<sup>6</sup> Page 20, line 12.

<sup>7</sup> Page 12, beginning with line 20.

<sup>8</sup> Page 12, beginning with line 5.

<sup>9</sup> Page 11, line 16.

<sup>10</sup> Page 11, line 13.

<sup>11</sup> Page 22, line 18.

<sup>12</sup> Page 10, line 14, and page 23, line 5.

within the plug 101. Activation of the electrical operators 105,<sup>13</sup> 106, 107, 108<sup>14</sup> within the plug 101, in conjunction with correct displacement of the mechanical locking mechanism,<sup>15</sup> or in the embodiments constructed without a mechanical locking mechanism, simple activation of the electrical operator 105, 106, 107, 108,<sup>16</sup> by application of electrical power to one, or more, of the corresponding coils 105b, 106b, 107b, 108b,<sup>17</sup> enables rotation of plug 101<sup>18</sup> within the bore of cylinder 102 as torque is manually applied to the blade of the key 200. An electronic memory ROM, or an electronic memory ROM and an electronic logic circuit  $\mu$ P wholly contained within the plug,<sup>19</sup> may be electrically interposed between the electrical operator and the electrical contacts 104x receiving power, or power and data signals, from the key 200, to control the rotation of cylinder plug 101 within cylinder shell 102, and thus govern the operation of lock 100 in dependence upon authentication and comparison of encoded data.<sup>20</sup>

Integration of an electrical operator with a locking mechanism may be achieved by

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- <sup>13</sup> Page 20, line 12, although note discussion of blocking armature 105a and solenoid coil 105b, beginning with line 7.
  - <sup>14</sup> Page 12, beginning with line 20.
  - <sup>15</sup> Page 11, beginning with line 5.
  - <sup>16</sup> Page 22, beginning with line 18.
  - <sup>17</sup> Page 22, beginning with line 18, through page 23, line 3.
  - <sup>18</sup> Illustrated with different implementations, in Figures 1 through 15.
  - <sup>19</sup> Page 22, beginning with line 12.
  - <sup>20</sup> Page 22, beginning with line 14.

incorporation of one, or more, electrical operators 105, 106, 107, 108<sup>21</sup> such as, by way the simplest of examples, the mere substitution electrical operators 105, 106, 107, 108 for pin tumblers 101b, or other types of tumblers,<sup>22</sup> within pin cylinders 80, 82<sup>23</sup>. Alternatively, a lock may be constructed with one, or more, electrical operators functioning without any mechanical locking mechanism simultaneously resident within cylinder plug 101. In either implementation, re-boring of one, or more, of pin cylinders 80, 82 may be necessary when retrofitting an existing lock; this will not require removal or other alteration of cylinder shell 102.<sup>24</sup>

Contrary to the inference of the Advisory Action, Paper No. 03162005, the appealed claims do not use either "means plus function" or "step plus function" definitions under the sixth paragraph of 35 U.S.C. §112.<sup>25</sup>

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

*Issues*

1. Claims 11 through 13, 90 and 120 have been rejected under the first paragraph of 35 U.S.C. §112 upon an averment of a lack of enablement.

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<sup>21</sup> Page 22, beginning with line 18.

<sup>22</sup> With a concomitant re-bitting of the corresponding key to omit from the blade of the key any (or each) "tooth corresponding to the cylinder occupied by solenoid 105b". See, page 20, line 21 and page 21, lines 1 and 2.

<sup>23</sup> Page 21, lines 8 through 11 and page 22, beginning with line 18., as illustrated by Figures 1 and 8A.

<sup>24</sup> Page 21, lines 8-11.

<sup>25</sup> 37 CFR §41.37(c)(1)(v).



2. Claims 1 through 5, 6 through 10, 14 through 24, 35 through 38, 70, 106, 111 and 121 have been rejected as indefinite under the second paragraph of 35 U.S.C. §112.
3. Claims 1 through 5, 11 through 13, 34, 65 through 69, 75, 92 through 100, 112 and 121 have been rejected under the judicially created doctrine of obviousness-type double patenting based upon Appellant's divisional U.S. Patent No. 6,564,601.
4. Claims 46 through 52, 54, 56, 64, 70, 76, 77, 90, 91, 105, 108, 109, 111, 113 through 116, and 119 through 121 have been rejected under 35 U.S.C. §103(a) as obvious, and unpatentable, over a proposed combination of Gokcebay, U.S. Patent No. 5,552,777 in view of Thordmark *et al.*, U.S. Patent No. 5,542,274 and Naveda, U.S. Patent No. 4,416,127.

## VII. GROUPING OF THE CLAIMS

### Grouping of the Claims

As confirmed by Paper No. 37, a *Corrected Decision On Petition* pursuant to 37 CFR §1.144, the instant Application discloses numerous species; several of those species are covered by the questions about the propriety of the final rejections of the claims now before the Board. These species have several features, characteristics and modes of operation, and each claim was

separately rejected in Paper Nos. 39 and 53. Paper Nos. 39 and 53 present but a single rejection of each claim. Consequently, the issues of patentability are particular to each claim, and each claim therefore, must stand or fall individually on the specific issue of patentability, independently of any other claim. Appellant notes that the style of the Examining Staff in explaining their interpretation of the applied art over the past eight and one-half years, and the inability of the Office to provide the clarification requested by Appellant under 37 CFR §1.104, makes it difficult for Appellant to precisely group the pending claims, due to the expectation that an *Examiner's Answer* may advance an explanation of the art not previously made of record. Where particular the administrative record fails to address claims such as dependent claims 50, 52 and 54, there is no need under 37 CFR §41.37 to further lengthen an already long Brief to specifically discuss these claims.

## VIII. ARGUMENT

### A. Rejection Of Claims 11-13, 90 & 120 Under First Paragraph Of 35 U.S.C. §112

Claims 11 through 13, 90 and 120 were rejected under the first paragraph of 35 U.S.C. §112, with an averment that Appellant's specification failed to satisfy the enablement requirement of the first paragraph of 35 U.S.C. §112. The rejection is improper for the following reasons.

#### 1. Claims 11-13

The Examiner correctly noted that claim 11 contained a typographic error, namely the phrase “distal member” was repeated twice. The fact that Appellant does satisfy both the written description and enablement prongs of the first paragraph of 35 U.S.C. §112 by describing how to make and use a “distal member” of Appellant “electrical operator”, as illustrated in at least three embodiments on 106(a), 107(a) and 108(a) in Figure 1, makes this rejection improper under the “enablement” requirement of the first paragraph, despite that fact that claim 11 may possibly be indefinite due to the typographical error. The error has been corrected in Appellant’s Amendment filed simultaneously herewith. Appellant notes however, that there is no rejection under the second paragraph of §112 of claim 11 in the record before the Board. Moreover, the occurrence of a “typographic error” does not create an issue under the first paragraph of 35 U.S.C. §112, absent more. Furthermore, there is no evidence of record of an absence of either (i) a lack of enablement the subject matter of claim 11, of (ii) an absence of a written description the subject matter of claim 11, or (iii) a failure to disclose the best mode for practicing the subject matter of claim 11.<sup>26</sup> Consequently, in view of the satisfaction of the requirement for enablement of the phrase “distal member”, this rejection may not be sustained under the first paragraph of §112.<sup>27</sup>

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<sup>26</sup> *High Concrete Structures, Inc. v. New Enter. Stone And Lime Co.*, — F.3d ----, WL 1689152 (Fed. Cir. 29<sup>th</sup> July 2004).

<sup>27</sup> Where the meaning of a claim is “reasonably discernable,” the claim is not indefinite. *Bancorp Servs., LLC v Hartford Life Ins. Co.*, 359 F.3d 1367, — USPQ2d. \_\_\_\_ (Fed. Cir. 1<sup>st</sup> March 2004).

## 2. Claims 90 and 120

First, Appellant notes that Paper No. 53 contains various assertions that infer that the use of the phrase *at least one*<sup>28</sup> in the Field, *et al.* '307 patent means *a plurality or more than one*. The Examiner has cited no authority under the statute to make this inference. Paper No. 53 has failed to demonstrate that the phrase *at least one*<sup>29</sup> as used in the Field, *et al.* '307 patent defines any number other than *one*. Attention of is invited to the complete absence of authority for the Examiner's proposition that the phrase *at least one* means any number other than *one*. Appellant's Figure 1, which displays an array of at least three electromechanical locking members 106a, 107a and 108a, all of which satisfy the definition of a locking member given by Field, *et al.* '307 in column 5, lines 1 through 8, and all or any one of which might be borne by Appellant's array of apertures 80, 82.

Second, Paper No. 53 also states that,

“the instant specification fails to provide support for the “at least one electromechanical locking member”<sup>30</sup>

Attention is invited to the illustrations in Figures, and especially Figure 1, where three distinct electromechanical locking members 106a, 107a and 108a are individually identified and described, and are collectively illustrated as an array. The structure and operation of each of these locking mechanisms are described in the originally filed specification. The attention of

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<sup>28</sup> Claim 1 of Field, *et al.* '307 reads, in part, “wherein *at least one* electromechanical locking member is disposed within the barrel ... .” Column 9, lines 5 and 6.

<sup>29</sup> Claim 1 of Field, *et al.* '307, column 9, lines 5 and 6.

<sup>30</sup> Paper No. 53, page 2, paragraph 3.

the Board is invited to also note Appellant's express teachings in, among other features, that Integration of an electrical operator with a locking mechanism may be achieved by incorporation of one, or more, electrical operators 105, 106, 107, 108<sup>31</sup> such as, to use the simplest of examples, the insertion of electrical operators 105b, 106b, 107b, 108b for pin tumblers 101b, or other types of tumblers,<sup>32</sup> into pin cylinders 80, 82<sup>33</sup>. Re-boring of one, or more, of pin cylinders 80, 82 may be necessary when retrofitting an existing lock; this will not require removal or other alteration of cylinder shell 102.<sup>34</sup>

In view of these teachings, there is no evidence of record to establish a lack of an absence of either (i) a lack of enablement the subject matter of claims 90 or 120, of (ii) an absence of a written description the subject matter of claims 90 or 120, or (iii) a failure to disclose the best mode for practicing the subject matter of claims 90 or 120.<sup>35</sup> Consequently, in view of the satisfaction of the requirement for enablement of the phrase "distal member", this rejection may not be sustained under the first paragraph of §112.<sup>36</sup>

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<sup>31</sup> Page 22, beginning with line 18.

<sup>32</sup> With a concomitant re-bitting of the corresponding key to omit from the blade of the key any (or each) "tooth corresponding to the cylinder occupied by solenoid 105b". See, page 20, line 21 and page 21, lines 1 and 2.

<sup>33</sup> Page 21, lines 8 through 11 and page 22, beginning with line 18., as illustrated by Figures 1 and 8A.

<sup>34</sup> Page 21, lines 8-11.

<sup>35</sup> *High Concrete Structures, Inc. v. New Enter. Stone And Lime Co.*, — F.3d ----, WL 1689152 (Fed. Cir. 29<sup>th</sup> July 2004).

<sup>36</sup> Where the meaning of a claim is "reasonably discernable," the claim is not indefinite. *Bancorp Servs., LLC v Hartford Life Ins. Co.*, 359 F.3d 1367, — USPQ2d. \_\_\_\_ (Fed.

**Third**, the attention of the Board is invited to the description of the *electromechanical locking member* given by Field, *et al.* '307:

“[a] plurality of electromechanical locking members 50, 52, 54 preferably are located within the central recess portion 42. The locking members are referred to as electroomechanical because, as described below, there are moved under the force of an electronically powered drive mechanism.”<sup>37</sup>

Wholly absent from Field, *et al.* '307 is any attribution of any electromechanical characteristic or property to elements 50, 52, 54; Field, *et al.* '307 describes elements 50, 52, 54 as a passive component. In contradistinction, Appellant's locking pin 201a is disclosed as a mechanical component made of a ferromagnetic material such as iron, that is moved under the force created by an electronically powered drive mechanism, namely coil 201b. Alternatively, Appellant's "armature 106a"<sup>38</sup> contains at least one of the "grooves or slots 51, 53, 55" attributed by Field, *et al.* '307 to his "locking members 50, 52, 54."<sup>39</sup> Wholly absent from Paper No. 52 is any explanation of why slots 51, 53, 55 in Field, *et al.* '307 convert each of elements 50, 52, 54 into "at least one electromechanical locking member", while slots 107c, 108h and grooves 105n of Appellant's electromechanical components 105D, 106a, 107a and 108a do not similarly convert Appellant's electromechanical components into "electromechanical locking members",

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Cir. 1<sup>st</sup> March 2004).

<sup>37</sup> Field, *et al.* '307, col. 5, lines 65 through 67, and col. 6, lines 1 and 2.

<sup>38</sup> Shown in Figures 2 and 3.

<sup>39</sup> Field, *et al.* '307, col. 5, lines 5 and 6.

page 15

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• A written explanation by the Examiner of why slots 51, 53, 55 in Field, *et al.* '307 convert each of elements 50, 52, 54 into "at least one electromechanical locking member", while slots 107c, 108h and grooves 105n of Appellant's electromechanical components 105D, 106a, 107a and 108a do not similarly convert Appellant's electromechanical components into "electromechanical locking members", when Appellant's electromechanical components 105D, 106a, 107a and 108a are disclosed as responding to an electrically driven motor or solenoid by exhibiting movement relative to a detent, or to a sidebar, or other obstruction?

These requested items of clarification have not been forthcoming; consequently, absent the requested clarification to the contrary, the record before the Board conclusively establishes that more than one art-recognized noun may be used to describe features and components disclosed in Appellant's application. In view of the foregoing explanation and demonstration of enablement under the first paragraph of 35 U.S.C. §112, these rejections should not be sustained. Such action from the Board is respectfully requested.

**B. Rejection Of Claims 1-5, 11-13, 34, 65-69, 75, 92-100, 112 & 121 Under Doctrine Of Obviousness Type Double Patenting**

Claims 1 through 5, 11 through 13, 34, 65 through 69, 75, 92 through 100, 112 and 121 were rejected under the doctrine of obviousness type double patenting. This rejection is improper, and may not be sustained.

This rejection is based upon the judicial doctrine of obviousness-type double patenting. Recently, in *Geneva Pharmaceuticals, Inc. v. Glaxo SmithKline PLC*, 349 F.3d 1373, 68 USPQ2d 1865 (Fed.Cir. 21<sup>st</sup> November 2003), the Court announced a two part test governing when 35 U.S.C. §121 bars an obviousness-type double patenting rejection. First, each claim of



Appellant '601 patent appeared in the instant application. Second, the Examiner actually imposed, maintained, and continues to maintain a requirement under 37 CFR §1.146 for an election of species, arguing that no generic claims were allowable. Subsequently, Appellant's divisional application was filed to present claims which were indicated by the Examiner to be allowable in the above-captioned application, and those claims were passed to issue in Appellant's '601 patent. Where, as here, the '601 patent is in conformance with 35 U.S.C. §121, and "was an application filed as a result of such a requirement ...", the resulting '601 patent "*shall not* be used as a reference ... in the Patent and Trademark Office ... against ... the original application."<sup>41</sup> The Examiner's requirement for restriction has never been withdrawn. Accordingly, 35 U.S.C. §121 bars this rejection and the Board is respectfully requested to refuse to sustain this rejection of claims 1 through 5, 11 through 13, 34, 65 through 69, 75, 92 through 100, 112 and 121 under the doctrine of obviousness-type double patenting.

### 1. Claims 1 Through 5

In support of the rejection, the Examiner asserts that,

"the conflicting claims are not identical, they are not patentably distinct from each other because they merely recite like elements using different terminology and/or phraseology such as 'detent' instead of 'bar'. It is noted that claims 1 and 11 recite a 'detent', but not a 'stationary detent', and thus side bar detent of the patent reads on this limitation."

The Examiner has misinterpreted the basis for the Election of Species detailed in Paper No. 37,

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<sup>41</sup> 35 U.S.C. §121.

set forth in the corrected Decision on Petition. Independent claim 1, by way of example, defines “an electrical operator ... obstructing said relative movement *by engaging a detent protruding from the cylinder.*” Appellant notes that claim 1 already defines a “side bar”, and separately defines an “electrical operator” as engaging a “detent protruding from the cylinder.” This feature and cooperation between constituent components is not present in the claims of Appellant’s later filed U.S. 6,564,601. The attention of the Board is directed to the embodiments of the species including Figure 1, where detents 106A, 107A are borne by cylinder 102, rather than by plug 101. None of claims 1 through 78 set forth in the Appellant’s later filed U.S. 6,564,601 define these features. The fact that one divisional patent is directed to a patentably distinct and independent species does not forestall the right of the Appellant under 35 U.S.C. §121 to claim one, or more, genius. Consequently, the Examiner’s assertion that the claims defer from those claims in Appellant ‘601 patent solely in terminology or phraseology is misplaced. These features are wholly absent from the claims set forth in Appellant’s ‘601 patent. Accordingly, and recognizing the inadequacy of the administrative record before the Board and the inability of Paper No. 53 to identify the features in any of the issued claims, this rejection may not be sustained.

## **2. Claims 11 Through 13**

Independent claim 11 defines, *inter alia*, “an electrical operator ... obstructing said relative movement when said distal member at least partially surrounds ... .” This feature defines the electrical operator with features such as those illustrated in Figure 1 by 106a, 107a and 108a. In contradistinction, the claims of Appellant’s ‘601 patent nowhere define these

features and functional operations. The complete absence of any allegation in Paper No. 53 that any particular claims in '601 contain such features, is convincing evidence of absence of obviousness-type double patenting. The Board is respectfully requested to refuse to sustain this rejection.

### **3. Claim 34**

Appellant notes that claim 34 defines a "side bar", and separately defines an "electrical operator" as engaging a "detent protruding from the cylinder." This feature and cooperation between constituent components is not present in the claims of Appellant's later filed U.S. 6,564,601. Moreover, Appellant's own work represented by his '601 patent can not serve as a basis for establishing obviousness; there is therefore, no evidence of record before the Board showing obviousness between any of the claims of Appellants' '601 patent and claim 34. The Board is respectfully requested to refuse to sustain this rejection.

### **4. Claims 65 Through 69**

Claim 65, as well as dependent claims 66 through 69, among other distinctions, define "an electrical operator comprising an armature, said armature ... rotating around said longitudinal axis with said plug ... ." This, among other features, is not present in the independent claims of Appellants' '601 patent. Appellant's own work represented by his '601 patent can not serve as a basis for establishing obviousness; there is therefore, no evidence of record before the Board showing obviousness of claims 65 through 69 over any of the claims of Appellants' '601 patent. The Board is respectfully requested to refuse to sustain this rejection.

**5. Claim 75**

Claim 75, among other distinctions, defines “an electrical operator ... electrically operable to respond to said control signal by moving along a radial axis that is traverse to said radial plane ... .” This feature of the elected specie, is not present any of the independent claims of Appellant’s own work represented by his ‘601 patent, and Applicant’s own work may not serve as a basis for establishing obviousness; there is no evidence of record before the Board showing obviousness of claim 75 over any of the claims of Appellants’ ‘601 patent. The Board is respectfully requested to refuse to sustain this rejection.

**6. Claims 92 Through 99**

Claim 92, upon which claims 93 through 99 depend, is closest in text and language to claim 62 of Appellant’s ‘601 patent. Unlike claim 62, rejected claim 92 defines a “bar interposed between said shell and said cylinder plug, while allowed claim 62 defines a “detent.” Moreover, claim 92 had been pending for about twenty-one months in the above-captioned application when claim 62 and Appellant’s ‘601 patent was filed on the 4<sup>th</sup> of February 2002. Given the circumstances under which claim 62 was filed, 35 U.S.C. §121 bars this rejection and the Board is respectfully requested to refuse to sustain this rejection of claim 92.

**C. Rejection Of Claims 46-52, 54, 56, 64, 70, 76, 77, 90, 91,  
105, 108, 109, 111, 113-116, 119, 120 And 121 Under 35 U.S.C.  
§103(a)**

Claims 46 through 52, 54, 56, 64, 70, 76, 77, 90, 91, 105, 108, 109, 111, 113 through 116, 119, 120 were all rejected under 35 U.S.C. §103(a) as rendered obvious, and unpatentable,

by the Examiner's proposed combination of Gokcebay U.S. 5.552.777 modified according to Thordmark U.S. 5.542.274 and Naveda U.S. 4.416.127. This proposed combination is improbable, is unsupported by any evidence of motivation in the record before the Board, and fails to provide a *prima facie* showing of obviousness; the Board is respectfully urged to refuse to sustain this rejection for the following reasons.

**The Rejection Under 35 U.S.C. §103 Fails To Make A *Prima Facie* Showing Of Obviousness**

According to MPEP 706.02(j), the following establishes a *prima facie* case of obviousness under 35 U.S.C. §103:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

**Claims 46-52, 56, 64, 70, 76, 77, 90, 91, 105 and 119**

**First**, although the record before the Board has recognized that the combination including Gokcebay '777 fails to either teach or suggest:

“a bar/detent which moves radially to the axis of the plug and the electronic operator having an electronic locking member which moves independently of the movement of the bar/detent which is reciprocated between a blocking and releasing position as a result of independent movement of the locking member.”

The record subsequently concludes however, that:

“[i]t would have been obvious ... to replace the simple blocking element of Gokcebay with the multipart electrically actuated blocking element of Thordmark et al to thwart natural attempts to force system locks ... [i]t would have further been an obvious reversal of parts and change of size to select miniature logic circuitry and a miniature solenoid and locking member 11 such that the blocking mechanism fits with a conventional sized lock plug as taught by Gokcebay and Naveda.”

Entirely ignored by the Examiner's proposed combination is that Appellant's claims 46 through 52 define “a bar borne by said plug and rotatable with said plug relative to said shell”, while claim 56 defines “a shell containing a hollow recess ... [and] an elongate member interposed between said shell and said plug ... in reponse to a torque that is externally applied to said plug and causes rotation ... exiting said recess”<sup>42</sup> while a comparable feature is defined by dependent claim 119, and claim 64 defines “a sidebar ... to travel generally along a radial plane ... [and] an electrical operator ... moving in a different plane independently of said travel by said sidebar”<sup>43</sup> and claim 105 defines “orienting said side bar to travel along a plane ... [and]

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<sup>42</sup> Despite the requirement of 37 CFR §1.104(b)(2) for identifying the “particular part” relied upon to support a rejection, Paper Nos. 39 and 53 are silent upon these details. It appears that in the proposed combination including the second “elongate member” 10, or even 11 of Thordmark '274, that second “elongate member” 10, or 11 must necessarily remain with the recess, or bore, provided by the outer shell of the lock in order for the cylinder plug to rotate. This is contrary to Appellant's claims, and prevents a true retro-fit of a lock cylinder without also a concomitant re-machining, or complete replacement of the outer shell. Moreover, this combination fails to meet the express language of claim 56.

<sup>43</sup> Again, Papers Nos. 39 and 53 pay no moment to the requirement of 37 CFR §1.104(b)(2) for identifying the “particular part” relied upon to support a rejection. In the proposed combination including Thordmark '274, the second “sidebar” 10 must necessarily move with the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant's claim 64.

positioning said locking member to move on an axis that is approximately perpendicular to said plane.”<sup>44</sup> Moreover, claim 70 defines “a bar ... to travel generally along a radial plane ... [and] an electrical operator borne by said cylinder plug ... moving along a geometric construct *other than* to said radial plane ... .”<sup>45</sup> Even ignoring *arguendo* that the primary reference is singularly devoid of any structure for bearing a detent, sidebar or bar, and that the Examiner’s proposed combination would impermissibly prevent the primary reference from operating in its intended mode of operation by obstructing the ability of the “block pin 38” of “small solenoid 36” of the primary reference to engage its cylinder shell 46, the Examiner’s proposed combination lacks teaching or suggestion of claim 46’s “bar borne by said plug and rotatable with said plug relative to said shell”, claim 56’s (and a similar feature defined by claim 119) “shell containing a hollow recess ... [and] an elongate member interposed between said shell and said plug ... in response to a torque that is externally applied to said plug and causes rotation ... exiting said recess”<sup>46</sup>, claim 64’s “sidebar ... to travel generally along a radial plane ... [and] an electrical

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<sup>44</sup> In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move within the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 64.

<sup>45</sup> In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move within the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 105.

<sup>46</sup> In the proposed combination including the second “elongate member” 10, or even 11 of Thordmark ‘274, that second “elongate member” 10, or 11 must necessarily remain with the recess, or bore, provided by the outer shell of the lock in order for the cylinder plug to rotate. This is contrary to Appellant’s claims, and prevents a true retro-fit of a lock cylinder without also a concomitant re-machining, or complete replacement of the outer shell. Moreover, this combination fails to meet the express language of claim 56.

operator ... moving in a different plane independently of said travel by said sidebar”<sup>47</sup>, and claim 70’s “bar ... to travel generally along a radial plane ... [and] an electrical operator borne by said cylinder plug ... moving along a geometric construct *other than* to said radial plane ...”; consequently the Examiner’s proposed combination fails to make a *prima facie* showing of obviousness as is required by the third criteria of the *MPEP* §706.02(j).<sup>48</sup>

**Second**, in the Examiner’s proposed combination, the placement of a “detent”, “sidebar” or “elongate bar” between the solenoid of the primary reference and the cylinder shell would impermissibly prevent the primary reference from being operated in its intended mode of operation with its solenoid 36 moving a “blocking pin 38”<sup>49</sup> engaging<sup>50</sup> “a bore or recess 50”<sup>51</sup> in the cylinder shell; it is these critical features with “an elongate bar ... interposed between said shell and said cylinder plug” which are expressly defined by Appellant’s claims 76, 77, 90 and 91. Consequently, this rejection is based upon an impermissible modification of the primary reference, and may not be maintained.

**Third**, the earlier noted fact that the Examiner’s proposed modification of the primary

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<sup>47</sup> In the proposed combination including Thordmark ‘274, the second “sidebar” 10 must necessarily move within the identical same plane as solenoid 17 (in Fig. 7) or motor 12 (in Figs. 3, 4 and 5), contrary to the express teaching of Appellant’s claim 64.

<sup>48</sup> Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP* §706.02(j).

<sup>49</sup> Gockebay ‘777, column 6, line 46.

<sup>50</sup> Gockebay ‘777, column 6, lines 45 and 46, “ Fig 3, show[s] a bore or recess 50 into which the blocking pin 38 extends in the blocking position.”

<sup>51</sup> Column 6, line 49.



reference would prevent the primary reference from being operated in its intended mode of operation, is itself convincing *indicia* of the non-obviousness of these claims.<sup>52</sup>

**Fourth**, there is no evidence of record for modifying the primary reference in the manner asserted by the Examiner, except through a hindsight reconstruction of the art in the light provided by Appellant alone. In the Examiner's proposed combination, only Thordmark '274 discloses a movable locking member cooperating with any electrical operator; that movable locking member 11, as well as "latching member 10", is however, borne by the cylinder shell, and not, as defined by Appellant's claims, borne by, or mounted upon, the plug. Naveda '127, which is a rather large case lock, in terms of the physical volume occupied by shell, or housing, of the lock in comparison to the primary reference, is utterly devoid of any cylinder plug, is bereft of a suggestion of a detent or sidebar, and contributes nothing to this proposed modification of the primary reference. In short, there is no evidence of record showing motivation for making the Examiner's proposed combination, and Naveda '127 does nothing to remedy these deficiencies noted in the primary and secondary references. The Federal Circuit has repeatedly emphasized that:

"[t]he test for obviousness is not whether the features of one reference may be bodily incorporated into another reference... Rather, we look to see whether combined teachings render the claimed subject matter obvious." *In re Wood*, 599 F.2d 1032, 202 USPQ 171, 174 (CCPA 1979) (citing *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549-50 (CCPA 1969); *In re Mapelsden*, 329

<sup>52</sup>

The Examiner's proposed combination would impermissibly prevent the primary reference from operating in its intended mode of operation by obstructing the ability of the "block pin 38" of "small solenoid 36" of the primary reference to engage its cylinder shell 46.

F.2d 321, 322, 141 USPQ 30, 32 (CCPA 1964).

Here, there is no actual teaching in the Examiner's proposed combination for shifting "a spring biased sidebar 10" anywhere; the primary reference does not require a sidebar and can not fit a sidebar between its blocking pin 38 and its recess 50 without interfering with functional operation; Thordmark '274 already has a "side-bar 7" which has no disclosed relation with its "electronic operator 12"; and Naveda '127 neither discloses nor indicates any need for a sidebar, whether biased or unbiased.<sup>53</sup> Absent the requisite evidence of motivation for making the Examiner's proposed combination, this rejection may not be sustained.<sup>54</sup>

**Claims 46, 56, 64, 70, 76, 77, 90, 120 and 121**

Independent claim 46 defines "a cylinder plug" with, among other features, "a bar borne by said plug ... and an electrical operator ... moving ... to accommodate said movement of said bar ... ." Claims 56, 64, 70, 76, 77, 90, 120 and 121 use alternative language to define other aspects of this feature. In contradistinction, the Examiner's proposed combination includes a primary reference which requires "a solenoid 36 which is effective *to retract* a blocking pin 38

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<sup>53</sup> The Examiner's reliance upon Naveda '127 as ostensibly teaching miniaturization is evidence of a misguided understanding of the relevant art: the structure of the case lock taught by Naveda '127 is necessarily huge, and substantially external to any cylinder component, when compared to the cylinder locks of Appellant and the primary reference.

<sup>54</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. ... The teaching or suggestion to make the claimed combination and the reasonable expectation of success ***must both be found in the prior art and not based on Appellant's disclosure***. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Emphasis added.

when energized”<sup>55</sup> in combination with Appellant’s “bore or recess 50 into which the blocking pin extends in the blocking position.”<sup>56</sup> The degree of completeness required by 37 CFR §1.104(b) in Paper No. 8 is unfortunately absent; there is no evidence of record explaining how the proposed combination can have “solenoid 36” respond to a data signal “by releasing said detent to move” as is required by Appellant’s claim 46, when the primary reference teaches that “solenoid 36” response to application of an electrical current by *holding* “blocking pin 38” in a retracted position when solenoid 36 is “energized”? Despite Appellant’s request in response to Paper No. 39 for clarification under 37 CFR §1.104(a)(b) and (c), no explanation has been forthcoming. Absent the requested clarification, this rejection may not be sustained.

Alternatively, if the Examiner has intended to assert that the proposed combination may be constructed with a wholesale substitution of “electrical operator 12, a movable electronic [*sic*] locking member 11” and latch 10 for the primary reference’s “electrical operator 36 ... [and] member 38”, the Examiner’s proposed combination is flawed because it impermissibly prevents the primary reference from operating in its intended mode of operation with “a bore or recess 50 [drilled into, or preferable through cylinder shell 46] into which blocking pin 38 extends in the blocking position” (*i.e.*, to directly and securely engage the cylinder shell) and concomitantly impermissibly prevents the primary reference from retentively holding “blocking

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<sup>55</sup> Gockebay ‘777, column 5, lines 55, 56.

<sup>56</sup> Gockebay ‘777, column 6, lines 45 and 46.

pin 38" in a retracted position when energized.<sup>57</sup> There is no evidence of record teaching this construction and concomitant modification of Gokcebay '777, except that provided by Appellant's claims alone among the art.<sup>58</sup> The mandate for completeness in the administrative record set forth 37 CFR §1.104(a), (b) and (c) has not been met here because Paper Nos. 39 and 53 fail to explain how the proposed combination might be constructed to preserve the teaching of the primary reference for "a bore or recess 50 [drilled into, or preferable through cylinder shell 46] into which blocking pin 38 extends in the blocking position" (*i.e.*, to directly and securely engage the cylinder shell) and concomitantly impermissibly prevents the primary reference from retentively holding "blocking pin 38" in a retracted position when energized. Clarification was previously requested, but was not provided. Consequently, the record before the Board does not support this rejection. Refusal to sustain this rejection is respectfully requested.

Under 35 U.S.C. §103(a),

"combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's

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<sup>57</sup> Under U.S. practice, these teachings of Gockebay '777 may not be ignored by the Examiner when constructing the proposed combination. According to MPEP §2141.02, "A prior art reference must be considered in its entirety, *i.e.*, as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Construction of the Examiner's proposed combination to eliminate these features of Gockebay '777 is improper under 35 U.S.C. §103(a).

<sup>58</sup> The Examiner's "obvious reversal of parts and change of size to select miniature logic circuitry and a miniature solenoid and locking member 11 such that the blocking mechanism fits with a conventional sized lock plug as taught by Gokcebay and Naveda" is fictitious and illusory, because there is no evidence of record which either teaches or suggest the "obvious reversal."

disclosure as a blueprint for piecing together the prior art to defeat patentability. *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999).

Consequently, this alternative construction is untenable, not only because it impermissibly prevents the primary reference, as modified by the two secondary references, from operating in its intended mode of operation, but also because neither of the two secondary references provide the specific motivation to construct Appellant's "a plug" with, among other features, "a detent disposed between said plug and a cylinder ... an electrical operator borne by ... and rotating with said plug ... releasing said detent to move ... ." Given this failure of a *prima facie* requisite showing of the obviousness under the criteria of §706.02(j) of the *Manual*,<sup>59</sup> the Board is respectfully requested to refuse to sustain this rejection.

#### **Claim 46**

Claim 46 was rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, the lock defined by claim 46 has a "bar borne by said plug ... interposed between said shell and said cylinder plug to reciprocate generally along a radial plane" in combination

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<sup>59</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. ... The teaching or suggestion to make the claimed combination ... ***must ... be found in the prior art and not based on Appellant's disclosure.*** *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

with “an electrical operator ... obstructing movement of said bar ... in response to a first state of said control signal and by moving within a second and different plane not coextensive with said radial plane in response to application of said control signal ... .” The Examiner neglected to explain how movement in different planes could be obtained by the proposed combination; in fact, all movement in the proposed combination exists within the same plane. That is, how can the Examiner’s proposed combination be configured so that moveable coil 17 and blocking element 11 of Thordmark ‘274 move along non-aligned planes, a feature that provides a mechanical advantage and heightened security that is not available with the proposed combination. Accordingly, there is no *prima facie* showing of obviousness, and claim 46 is readily patentably distinguishable over the prior art.

**Second**, and as earlier noted, Appellant’s lock defined by claim 46 has a “bar *borne by said plug* ... interposed between said shell and said cylinder plug to reciprocate generally along a radial plane” in combination with,

“an electrical operator ... obstructing movement of said bar ... in response to a first state of said control signal and by moving within a second and different plane not coextensive with said radial plane in response to application of said control signal ... .”

These features are wholly absent from the Examiner’s proposed combination because the modification of Gokcebay ‘777 made by the Examiner has a “latching element 10, therewith enabling the latching element [10 of the proposed combination] to be pressed *radially outwards as the plug 3 is turned with the key 4.*” Thordmark ‘274, col. 5, lines 24-26. Whether by some force of magic or by simple hindsight reconstruction of the art, if moving coil 17 is somehow

incorporated into cylinder plug 24 of Gokcebay '777, that same radially outward motion will remain as a constant. The fact that latching member 10 can not both travel *radially outwardly* as the cylinder plug rotates as is taught by the Examiner's proposed combination and be carried by the cylinder plug as the plug rotates as dis defined by Appellant's claim 46, prevents the Examiner's proposed combination from providing Appellant's "bar *borne by said plug* ... interposed between said shell and said cylinder plug to reciprocate generally along a radial plane ... ." This difference is not trivial and must be considered in determining obviousness *vel non* because it is this difference that enables Appellant's bar to be carried with the cylinder plug and to cooperate with another locking mechanism carried by the cylinder plug. The Examiner's combination can no provide this advantage. Accordingly, claim 46 is patentably distinguishable and allowable.

#### **Claims 14 and 43**

The record before the Board demonstrates that the Examining Staff has impermissibly neglected to examine "the subject matter" of claims 14 and 43 "as a whole" as required under the first paragraph of 35 U.S.C. §103. Specifically, the secondary locking mechanism of both Gokcebay '777 and Thordmark '274 operate wholly, completely and independently of their respectively pin tumblers and side tumblers, while Naveda '127 discloses but a single mechanism devoid of any secondary locking feature; consequently, the proposed combination of art can not be interpreted as teaching Appellant's "elongate member" that provides "simultaneously engagement of said cylinder and said plug" in combination with "electrical operator" that is disposed to maintain "said simultaneously engagement" provided by the

elongate member. Neither the solenoid 36 and pin 38 of the primary reference nor the coil 17 of the secondary reference may be said to maintain Appellant's simultaneously engagement provided by the elongate member between the cylinder and the plug. There is no *prima facie* showing of obviousness. It is this cooperation between the elements of Appellant's structure that has resulted in a compound mechanism that is both compact and reliable with the electrical operator reinforcing the locking provided by the apparatus. In view of these and other distinctions, as well as the noted advantages flowing from those distinctions, the Examiner's proposed combination improperly fails to consider the "subject matter as a whole" and is required by 35 U.S.C. §103, and the rejection must be withdrawn.

As was earlier noted, both the primary and secondary references rely upon bitted keys and the corresponding pin tumblers to provide their primary locking functions. As was also earlier noted, with the exception of Naveda '127 which has but a single locking mechanism, both of those primary locking functions are structurally independent of the "secondary locking 'high security' mechanical features" (see Gokcebay '777, col. 6, lines 55, 56). The Examiner's comments under 37 C.F.R. §1.104(c)(2) tend to become rambling and fail to clearly designate "the particular part relied on" in the three references that form the proposed combination. To the extent that the Examiner proposes to place the moving coil 17 and armature 18 of Thordmark '274 into the plug of Gokcebay '777 in accordance with an obscure and unidentified teaching of Naveda '127, moving coil 71 and armature 18 will surely displace the "conventional pin tumbler mechanical bittings" of Gokcebay (see Gokcebay '777, col. 6, line 62) from the cylinder plug and concomitantly, impermissibly destroy the ability of the primary reference to



rely upon those “conventional pin tumbler mechanical bittings” as the primary locking mechanical feature; this is an improper combination under 35 U.S.C. §103 and may not be relied upon to support an obviousness rejection.

To the extent that the Examiner intends to have moveable coil 17 and blocking element 11 of Thordmark '274 in a radial orientation in the proposed combination, that configuration will simply replace solenoid 36 and blocking pin 38 of the primary reference because moveable coil 17 and blocking element 11 travel together. Moreover, blocking element 11 has no useful function in such a configuration. Furthermore, this configuration will still not meet the several features of claims 14 and 43 that are noted in the foregoing paragraphs, and the Examiner's reliance upon Naveda '127 will not remedy these deficiencies.

**Claims 46 through 52, 54, 56, 64, 70, 76, 77, 90, 91, 105, 108, 109, 111, 113 through 116, 119, 120**

The rejection of claims 46 through 52, 54, 56, 64, 70, 76, 77, 90, 91, 105, 108, 109, 111, 113 through 116, 119, 120 as rendered obvious, and unpatentable over the Examiner's proposed combination is unsustainable on the record before the Board.

**First**, the combination proposed by the Examiner would impermissibly destroy the ability of the primary reference to operate in its intended mode of operation. Gokcebay '777 expressly teaches a radially oriented solenoid 36 and blocking pin 38, together with the pin tumbler relied upon by the Examiner.<sup>60</sup> The alternative embodiment illustrated by Figure 7 of Thordmark '274

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<sup>60</sup> Gokcebay '777, column 6, lines 61 and 62.

that is relied upon by the Examiner includes side tumblers 5 and side bar 7 mounted in the cylinder plug 3, while the coil 17 and the blocking element 11 are mounted within the shell rather than within the cylinder plug. Gokcebay '777 however, expressly teaches in col. 3, beginning with line 2, that all of electronics and hardware are "contained in the cylinder plug", and that nothing is "required outside of the lock cylinder" aside

"from a small recess or bore which is provided in the cylinder shell."

This is a critical distinction because the combination proposed by the Examiner relies upon the hardware and electronics of Thordmark '274 that are necessarily housed within the shell, rather than within the cylinder plug as required by the primary reference. Moreover, that combination eliminates the small recess or bore of the primary reference, which the primary reference relies upon to assure a positive locking by allowing "for secondary locking high security mechanical features, generally located in side of the cylinder plug." See Gokcebay '777 at col. 6, beginning with 55. Consequently, the Examiner's proposed combination fails to provide Appellant's "electronically powered drive mechanism located within the barrel *and cooperating with* the electromechanical locking member to selectively move the locking member from the barrel blocking position ... ." In short, both the simplicity and the secondary locking of the primary reference are removed by the Examiner's proposed combination.

**Second**, it is unclear whether the Examiner's proposed combination relies upon the pin tumblers (not shown, col. 6, lines 61-62) of Gokcebay '777 or the "latching element 10" of Thordmark '274, to meet Appellant's pending claims. An analysis of the Examiner's proposed

combination incorporating the pin tumblers (not shown, col. 6, lines 61-62) of Gokcebay '777 is discussed in the preceding paragraph. To the extent that the Examiner incorporates the "latching element 10" of Thordmark '274 to meet the language of Appellant's pending claims, there are two structural impediments which make the Examiner's proposed combination untenable. First, claim 90 defines a structure with "a side bar ... [and] an electronically powered drive mechanism located within the barrel *and cooperating with* the electromechanical locking member to selectively move the locking member from the barrel blocking position to the non-barrel blocking position in which the side bar moves out of the cavity ..." and "an electromechanical locking member disposed within the barrel member ... positionable to permit the side bar to engage the locking member in a non-barrel blocking position... ." In contradistinction, in the Examiner's proposed combination, coil 17, blocking element 11 and latching element 10 of Thordmark '274 must reside in the cylinder shell in order to accommodate the existence of the top tumblers and side tumblers 5 for top code 4a and side code 4b that, as shown by Figs. 1 and 2, extend over substantially the entire axial length of plug 3. Second, coil 17, blocking element 11 and latching element 10 of Thordmark '274 are mounted within an axial recess. Wholly absent from the art relied upon by the Examiner to make this proposed combination is any teaching or suggestion of how to alter the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark '274 (that form the "secondary locking high security mechanical features" required by Gokcebay '777) to fit within the mass of plug 3 without displacing the combination of the keyway and the primary locking mechanism (formed by the top tumblers and side tumblers 5 for top code 4a and side code 4b). Appellant submits

that any miniaturization of the “secondary locking high security mechanical features” that may be required by Gokcebay ‘777) in order to fit within the mass of plug 3 would necessarily diminish the ability of latching element 10 to resist “shear forces at the interface between plug and lock cylinder.”<sup>61</sup> This miniaturization of the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 in order to mount these components within the plug of Gokcebay ‘777 essentially reduces latching element 10 to nothing more than “a latching pin.” This is hardly an enhancement of security as is asserted by the Examiner. It should be noted however, that the Examiner’s proposed combination incorporating Thordmark ‘274 expressly warns that such structures as “latching pins or like devices will fracture even when only a relatively moderate force is used on the lock, therewith enabling the lock to be opened.”<sup>62</sup> In short, the Examiner’s proposed combination is a deliberate and improper weakening of the “high security” demanded by Gokcebay ‘777 of such secondary locking mechanical features.<sup>63</sup>

The suggestions of Naveda ‘127 about the “size or geometric shape” of a key,<sup>64</sup> and the presence of an “electromagnet” that is “located in the receiver or alternatively in the body of the key”,<sup>65</sup> are immaterial to these issues raised by the Examiner’s miniaturization of the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 in

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<sup>61</sup> See Thordmark ‘274, at column 2, lines 54-57.

<sup>62</sup> Thordmark ‘274, col. 2, lines 57-61.

<sup>63</sup> See Gokcebay ‘777, at column 6, lines 55-56.

<sup>64</sup> Naveda ‘127, the “size or geometric shape” of a key (col. 4, line 60).

<sup>65</sup> Naveda ‘127, column 9, lines 22-25.

order to mount these components within the plug of Gokcebay '777 because Naveda '127 teaches nothing about Appellant's barrel member. Moreover, the "electromagnetic 36" of Naveda '127 is structurally and functionally different from Appellant's "electronically powered drive mechanism." Incorporation of "electromagnetic 36", which is not small in size, into the plug of Gokcebay '777 will remedy none of the deficiencies in the Examiner's proposed combination noted earlier in this response.

In view of the fact that both the primary and secondary references teach away from such diminution of security, and nothing in Naveda '127 neither teaches nor suggests how to accommodate the presence of both the combination of the keyway 26 (of Gockebay '777) and the primary locking mechanism (formed for example, by the top tumblers and side tumblers 5 for top code 4a and side code 4b) and the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark '274. In contradistinction, Appellant's structure alone allows for a sidebar that may be axially extended over the entire length of the junction between the shell and the cylinder plug, a structure that, unlike the Examiner's proposed miniaturization, is better able to resist "shear forces at the interface between plug and lock cylinder." See Thordmark '274, at column 2, lines 54-57. Moreover, the Examiner's proposed combination makes no provision for either "side bar cooperating between the shell and the barrel ... wherein at least one electromechanical locking member is disposed within the barrel and is positionable in a barrel blocking position" as defined by claim 85 or the "locking member including a groove" that is "disposed within the recess of the barrel member" defined by Appellant's claim 89.

In short, formation of the axial recess in cylinder plug 24 of Gokcebay '777 necessary to

accommodate the configuration of the secondary locking mechanism of coil 17, blocking element 11 and latching element 10 of Thordmark '274 would essentially cleave plug 24 in two, with the T-shaped element 20 on one side of the cleave and latching element 10 protruding from the other side of that cleave, while any miniaturization of the secondary locking mechanism would be contrary to the express teachings of Thordmark '274 and would diminish the security which both Gokcebay '777 and Thordmark '274 teach; under 35 U.S.C. §103 the Examiner can not alone modify the structures taught by the primary and secondary references in a manner that would defeat the expressly articulated goal of those references. These deficiencies in the Examiner's proposed combination, together with the enhancement of the security provided thereby, are evidence of the non-obviousness of the lock defined by the structure of claims 85 through 89. Reversal of this rejection is therefore required.

There is simply neither basis nor motivation for making the combination proposed by the Examiner except as an impermissible hindsight reconstruction of the art in the light provided only by Appellant's claims. Thordmark '247 expressly denigrates the use of "radially directed elements" such as that taught by Gokcebay '777,<sup>66</sup> and expressly states that his structure "is to eliminate the aforesaid drawbacks" (see Thordmark '274, col. 2, lines 64-65) that are attendant upon those "radially directed elements" while Naveda '127 is completely silent on the efficacy of structures such as those taught by the primary reference. Neither the express limitations of Appellant's claims nor this express denigration of the Examiner's proposed combination may be ignored in a determination of obviousness *vel non* because this denigration by the secondary

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<sup>66</sup> See Thordmark '274, col. 2, lines 50-60.

reference expressly negates the requisite motivation necessary to make the Examiner's proposed combination under 35 U.S.C. §103. Accordingly, the rejection is improper and can not stand.

**Claims 47, 48 and 51**

Dependent claims 47, 48 and 51, further define the structure of parent claim 46, albeit in terms of the operator. Contrary to the Examiner's assertions, neither Naveda '127 nor Thordmark '274 nor Gockebay '777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay '777 teaches only insertion of a solenoid within the cylinder,
- Gockebay '777 is wholly devoid of any bar (other than the armature 18 that is itself a part of solenoid 17),
- Gockebay '777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,
- Thordmark '274 teaches nothing about insertion of any operator within the cylinder,
- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,
- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction with their primary locking mechanical features, and
- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no

primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,

- Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar interposed between the shell and the cylinder plug. The fact that the art is singularly and uniformly silent on this small advance may not be ignored in any determination of the obviousness *vel non* based upon "the differences between the subject matter sought to be patented and the prior art ... ." <sup>67</sup>

#### **Claim 49**

Unlike the structures found in the Examiner's proposed combination with separate and independent mechanical and electromagnetic locking mechanisms, claim 49 defines a structure with an integration of the structure as well as the operation of "obstructing movement" of the cylinder plug relative to the shell, a feature neither taught nor illustrated by the Examiner's proposed combination. Consequently, the administrative record fails to provide a *prima facie* showing of obviousness.

#### **Claim 56**

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<sup>67</sup> 35 U.S.C. §103(a).



Claim 56 was rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

The lock defined by claim 56 has “an elongate member interposed between said shell and said plug to travel generally along a radial direction” in combination with “an electrical operator responding to said control signal by moving in a second direction not aligned with said radial direction ... obstructing said travel ... .” Wholly absent from the Examiner’s proposed combination is any teaching of how an electrical operator formed by moveable coil 17 and blocking element 11 of Thordmark ‘274 could be made to travel in any direction that is not aligned with said radial direction.” Moreover, the Examiner’s comments have neglected to explain how movement in different planes could be obtained by the proposed combination; in fact, all movement in the proposed combination exists only within the same plane. Accordingly, there is no *prima facie* showing of obviousness, and claim 56 is readily patentably distinguishable over the prior art.

**Claims 64, 65, 70, 75, 76 and 77**

Independent claims 64, 65, 70, 75, 76 and 77 were rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, the lock defined by claim 64 uses “a bar interposed between said shell and said

cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving independently of said travel by said bar, between one of a first orientation providing obstruction of said travel and a second and different orientation accommodating *said travel ...*.” As defined by claim 65, Appellant’s lock uses “a bar interposed between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving in a second direction not aligned with said radial direction ... obstructing *said travel ...*.” Claim 70 uses “a bar interposed between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving along a geometric construct other than to said radial plane between one of a first orientation providing obstruction of said travel and a second and different orientation accommodating said travel ... .” Claim 75 uses “a bar interposed between said shell and said cylinder plug to travel generally along a radial plane” in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving along a radial axis that is transverse to said radial plane between a first orientation providing obstruction of said travel and a second and different orientation accommodating said travel ... .” Claim 76 uses “an elongate bar exhibiting a greatest longitudinal dimension along a second axis that extends transversely to said first base

and to said second base, said bar being interposed between said shell and said cylinder plug to travel generally along a radial axis that is transverse to said second axis ... “ in combination with “an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving along said radial axis between one of a first orientation providing obstruction of *said travel* and a second and different orientation accommodating *said travel* ... .” Claim 77 however, uses “an elongate bar exhibiting a greatest longitudinal dimension along a second axis that extends transversely to said first base and to said second base, said bar being interposed between said shell and said cylinder plug to travel generally along a radial axis that is radial to said cylinder plug and transverse to said second axis, between a first position engaging both said shell and said plug while obstructing rotation of said cylinder plug within said recess ...” together with “an electrical operator borne by said cylinder plug and rotatable with said plug ... to respond to a control signal by moving between one of a first orientation providing obstruction of *said travel* ... .” Not only does the Examiner’s proposed combination fail to meet these varied express geometric definitions, but Appellant’s interaction between an electrical operator borne by and rotatable with the cylinder plug and the travel of the bar interposed between the shell and the cylinder plug is not found in the prior art, either taken as individual references or in the combination proposed by the Examiner simply because all of the references relied upon by the Examiner uniformly restrict movement to within a single plane. The substitution of moveable coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 for solenoid 36 and blocking pin 38 of Gokcebay ‘777 necessary to construct the Examiner’s proposed combination will prevent the

proposed combination from achieving Appellant's travel and orientation. Consequently, the Examiner has failed to make a *prima facie* showing of obviousness. It is this difference in geometric movement, together with the defined inter-cooperation that advantageously endow Appellant's embodiments with the enhanced security of the locking function that is available with neither the primary or either of the two secondary references. Independent claims 64, 65, 70, 75 and 76 are therefore patentably distinguishable, and allowable under 35 U.S.C. §103(a).

**Second**, the sole motivation provided in the art for the combination proposed by the Examiner is an impermissible reconstruction of the art in the light provided by Appellant alone. This, by itself, is convincing indicia of the patentability of claims 64, 65, 70, 75 and 76 under 35 U.S.C. §103.

**Third**, ostensibly the prior art relied upon by the Examiner endeavors to provide a lock that may be easily retrofitted. Gokcebay '777 however, requires that a bore 50 be drilled within the shell of the existing lock while Thordmark '274 requires that a separate V-shaped groove 3c that is spaced-apart and distinct from the slot for sidebar 7, be machined within the cylinder, and that the entire recess shown in Figure 1 be machined into the shell. Contrary to the Examiner's assertions, neither Naveda '127 nor Thordmark '274 nor Gockebay '777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay '777 teaches only insertion of a solenoid within the cylinder,
- Gockebay '777 is wholly devoid of any bar (other than the armature 18 that is itself

a part of solenoid 17),

- Gockebay '777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,

- Thordmark '274 teaches nothing about insertion of any operator within the cylinder,

- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,

- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction with their primary locking mechanical features, and

- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,

- Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar, elongate member or sidebar interposed between the shell and the cylinder plug. Although these differences may appear to be but a small advance in the art, the advantages flowing from these differences are substantial. For example, only Appellant's claims define a structure with an electronic operator borne by the cylinder plug that interacts with a sidebar, elongate member or bar, and that consequently, is able to advantageously both retrofit an installed lock by the expedient of replacing only the cylinder plug *without any* alteration of the

shell and to *interact or cooperate with* an existing sidebar of a primary mechanical locking mechanism that is positioned between the shell and plug. The fact that both Gockebay '777 and Thordmark '274 are concerned with retrofitting of existing locks, a fact noted by the Examiner, and that both references require modification of the shell of the lock in order to complete that retrofitting, while Appellant alone provides a cylinder plug that may work with an existing sidebar and may be retrofit without any modification of the shell is a difference between the prior art and the structure defined by the pending claims that prevents the subject matter as a whole from being obviousness under 35 U.S.C. §103. This deficiency in the Examiner's proposed combination is not remedied by Naveda '127. Moreover, this deficiency is highlighted by the fact that Thordmark '274 clearly avoids either teaching or suggestion of any interaction or cooperation between sidebar 7 and coil 17.

This interaction with the existing sidebar beneficially enhances the security provided by Appellant's lock. Neither Gockebay '777, Thordmark '274 nor Naveda '127, nor the Examiner's proposed combination of Gockebay '777, Thordmark '274 and Naveda '127 are able to provide these advantages. Moreover, the Examiner's proposed combination is incomplete and fails to make a *prima facie* showing of obviousness; how, for example, is the traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777? No details of such a combination are provided by the Examiner's proposed combination. Accordingly, in view of these differences between the pending claims and the prior art, "the subject matter as a whole" can not be found to be rendered obvious under 35 U.S.C. §103. In short, the Examiner has unfairly sought to limit the scope of coverage to which

Appellant is entitled by reconstructing the art in an effort to meet the terms of Appellant's claims when none of that art suggests such a simple modification of the art as Appellant's electrical operator being both borne by and rotating with the cylinder plug *and* operating to block the travel of a sidebar. Accordingly, reversal of this rejection is required.

**Claim 90**

Independent claims 90, which Appellant copied from claim 19 of the Field U.S. Patent No. 5,839,307, was rejected under 35 U.S.C. §103(a) as rendered obvious by proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, Appellant notes that the Examiner improperly asserted that independent claim 90, copied from claim 19 of Field '307 patent, was withdrawn from consideration, even though claim 90 defines the salient features of Appellant's elected species. Moreover, the field of search is co-extensive with the elected species. Consideration of claim 90 is therefore required.

**Second**, the combination proposed by the Examiner would impermissibly destroy the ability of the primary reference to operate in its intended mode of operation. Gokcebay '777 expressly teaches a radially oriented solenoid 36 and blocking pin 38, together with the pin tumbler relied upon by the Examiner, mentioned in col. 6, lines 61 and 62. The alternative embodiment illustrated by Figure 7 of Thordmark '274 that is relied upon by the Examiner includes side tumblers 5 and side bar 7 mounted in the cylinder plug 3, while the coil 17 and the blocking element 11 are mounted within the shell rather than within the cylinder plug. Gokcebay

'777 however, expressly teaches in col. 3, beginning with line 2, that all of electronics and hardware are "contained in the cylinder plug", and that nothing is "required outside of the lock cylinder" aside "from a small recess or bore which is provided in the cylinder shell." The combination proposed by the Examiner relies upon the hardware and electronics of Thordmark '274 that are necessarily housed within the shell, rather than within the cylinder plug as required by the primary reference. Moreover, that combination eliminates the small recess or bore of the primary reference, which the primary reference relies upon to assure a positive locking by allowing "for secondary locking high security mechanical features, generally located in side of the cylinder plug." See Gokcebay '777 at col. 6, beginning with 55. Consequently, the Examiner's proposed combination fails to provide Appellant's "electronically powered drive mechanism located within the barrel *and cooperating with* the electromechanical locking member to selectively move the locking member from the barrel blocking position ... ." In short, both the simplicity and the secondary locking of the primary reference are removed by the Examiner's proposed combination.

**Third**, it is unclear whether the Examiner's proposed combination relies upon the pin tumblers (not shown, col. 6, lines 61-62) of Gokcebay '777 or the "latching element 10" of Thordmark '274, to meet Appellant's pending claims. An analysis of the Examiner's proposed combination incorporating the pin tumblers (not shown, col. 6, lines 61-62) of Gokcebay '777 is discussed in the preceding paragraph. To the extent that the Examiner incorporates the "latching element 10" of Thordmark '274 to meet the language of Appellant's pending claims, there are two structural impediments which make the Examiner's proposed combination



untenable. First, claim 90 defines a structure with “a side bar ... [and] an electronically powered drive mechanism located within the barrel *and cooperating with* the electromechanical locking member to selectively move the locking member from the barrel blocking position to the non-barrel blocking position in which the side bar moves out of the cavity ...” and “an electromechanical locking member disposed within the barrel member ... positionable to permit the side bar to engage the locking member in a non-barrel blocking position... .” In contradistinction, in the Examiner’s proposed combination, coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 must reside in the cylinder shell in order to accommodate the existence of the top tumblers and side tumblers 5 for top code 4a and side code 4b that, as shown by Figs. 1 and 2, extend over substantially the entire axial length of plug 3. Second, coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 are mounted within an axial recess. Wholly absent from the art relied upon by the Examiner to make this proposed combination is any teaching or suggestion of how to alter the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 (that form the “secondary locking high security mechanical features” required by Gokcebay ‘777) to fit within the mass of plug 3 without displacing the combination of the keyway and the primary locking mechanism (formed by the top tumblers and side tumblers 5 for top code 4a and side code 4b). Appellant submits that any miniaturization of the “secondary locking high security mechanical features” that may be required by Gokcebay ‘777) in order to fit within the mass of plug 3 would necessarily diminish the ability of latching element 10 to resist “shear forces at the interface between plug

and lock cylinder.”<sup>68</sup> This miniaturization of the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 in order to mount these components within the plug of Gokcebay ‘777 essentially reduces latching element 10 to nothing more than “a latching pin.” This is hardly an enhancement of security as is asserted by the Examiner. It should be noted however, that the Examiner’s proposed combination incorporating Thordmark ‘274 expressly warns that such structures as “latching pins or like devices will fracture even when only a relatively moderate force is used on the lock, therewith enabling the lock to be opened.”<sup>69</sup> In short, the Examiner’s proposed combination is a deliberate and improper weakening of the “high security” demanded by Gokcebay ‘777 of such secondary locking mechanical features.<sup>70</sup>

The suggestions of Naveda ‘127 about the “size or geometric shape” of a key,<sup>71</sup> and the presence of an “electromagnet” that is “located in the receiver or alternatively in the body of the key”,<sup>72</sup> are immaterial to these issues raised by the Examiner’s miniaturization of the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 in order to mount these components within the plug of Gokcebay ‘777 because Naveda ‘127 teaches nothing about Appellant’s barrel member. Moreover, the “electromagnetic 36” of Naveda ‘127 is structurally and functionally different from Appellant’s “electronically powered

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<sup>68</sup> See Thordmark ‘274, at column 2, lines 54-57.

<sup>69</sup> Thordmark ‘274, col. 2, lines 57-61.

<sup>70</sup> See Gokcebay ‘777, at column 6, lines 55-56.

<sup>71</sup> Naveda ‘127, the “size or geometric shape” of a key (col. 4, line 60).

<sup>72</sup> Naveda ‘127, column 9, lines 22-25.

drive mechanism.” Incorporation of “electromagnetic 36”, which is not small in size, into the plug of Gokcebay ‘777 will remedy none of the deficiencies in the Examiner’s proposed combination noted earlier in this response.

In view of the fact that both the primary and secondary references teach away from such diminution of security, and nothing in Naveda ‘127 neither teaches nor suggests how to accommodate the presence of both the combination of the keyway 26 (of Gockebay ‘777) and the primary locking mechanism (formed for example, by the top tumblers and side tumblers 5 for top code 4a and side code 4b) and the configuration of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274. In contradistinction, Appellant’s structure alone allows for a sidebar that may be axially extended over the entire length of the junction between the shell and the cylinder plug, a structure that, unlike the Examiner’s proposed miniaturization, is better able to resist “shear forces at the interface between plug and lock cylinder.” See Thordmark ‘274, at column 2, lines 54-57. Moreover, the Examiner’s proposed combination makes no provision for either “side bar cooperating between the shell and the barrel ... wherein at least one electromechanical locking member is disposed within the barrel and is positionable in a barrel blocking position” as defined by claim 85 or the “locking member including a groove” that is “disposed within the recess of the barrel member” defined by Appellant’s claim 89.

In short, formation of the axial recess in cylinder plug 24 of Gokcebay ‘777 necessary to accommodate the configuration of the secondary locking mechanism of coil 17, blocking element 11 and latching element 10 of Thordmark ‘274 would essentially cleave plug 24 in two, with the T-shaped element 20 on one side of the cleave and latching element 10 protruding from

the other side of that cleave, while any miniaturization of the secondary locking mechanism would be contrary to the express teachings of Thordmark '274 and would diminish the security which both Gokcebay '777 and Thordmark '274 teach; under 35 U.S.C. §103 the Examiner can not alone modify the structures taught by the primary and secondary references in a manner that would defeat the expressly articulated goal of those references. These deficiencies in the Examiner's proposed combination, together with the enhancement of the security provided thereby, are evidence of the non-obviousness of the lock defined by the structure of claim 90. Reversal of this rejection is therefore required.

#### Claim 90

Independent process claims 90 defines a process of "retrofitting a mechanical cylinder lock to form an electromechanical cylinder lock". The Examiner's proposed combination requires a "recess or bore 50" in order to meet the express teachings of the primary reference, namely that:

"this bore, recess or groove 50 is the only modification *required* in the entire lock ... the bore or recess 50 is *easily formed* by drilling a hole through the cylinder shell or forming an internal recess or groove on the inside surface of the cylinder shell"<sup>73</sup>

Appellant's process neither uses nor requires a modification of the shell to accommodate the process of rejected claim 90. Recognizing that the Examiner's modification of the primary

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Gockebay '777, column 46 - 51; column 6, lines 45 and 46 states that " Fig 3, show[s] a bore or recess 50 into which the blocking pin 38 extends in the blocking position."

reference in a manner which prevents the operation of the primary reference in its intended mode, is impermissible, not only is there no evidence of motivation in the record to support the Examiner's proposed process, but the fact that Appellant's process advantageously eliminates this awkward step of first removing, and then drilling the cylinder shell, is further evidence of non-obviousness of the processes of claim 90. Given this evidence, and the advantageous results flowing therefrom, claim 90 is allowable over the prior art.

### **Claim 91**

Claim 91 was rejected under 35 U.S.C. §103(a) as rendered obvious by the proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. Appellant respectfully traverses this rejection for the following reasons.

**First**, the lock defined by claim 91 uses "a bar interposed between said shell and said cylinder plug to reciprocate generally along a radial plane" in combination with "an electrical operator borne by said cylinder plug and rotatable with said plug, said electrical operator being electrically operable to respond to said control signal by moving independently of said bar between a first orientation providing obstruction of *said reciprocation* by said bar and a second and different orientation removing said obstruction." The sole motivation provided in the art for the combination proposed by the Examiner is an impermissible reconstruction of the art in the light provided by Appellant alone. This, by itself, is convincing indicia of the patentability of claims 64, 65, 70, 75 and 76 under 35 U.S.C. §103.

**Second**, ostensibly, all of the art relied upon by the Examiner endeavors to provide a lock

that may be easily retrofitted. Gockebay '777 however, requires that a bore 50 be drilled within the shell of the existing lock while Thordmark '274 requires that a separate V-shaped groove 3c that is spaced-apart and distinct from the slot for sidebar 7, be machined within the cylinder, and that the entire recess shown in Figure 1 be machined into the shell. Contrary to the Examiner's assertions, neither Naveda '127 nor Thordmark '274 nor Gockebay '777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay '777 teaches only insertion of a solenoid within the cylinder,
- Gockebay '777 is wholly devoid of any bar (other than the armature 18 that is itself a part of solenoid 17),
- Gockebay '777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,
- Thordmark '274 teaches nothing about insertion of any operator within the cylinder,
- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,
- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction with their primary locking mechanical features, and
- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,

● Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar, elongate member or sidebar interposed between the shell and the cylinder plug. Although these differences may appear to be but a small advance in the art, the advantages flowing from these differences are substantial. For example, only Appellant's claims define a structure with an electronic operator borne by the cylinder plug that interacts with a sidebar, elongate member or bar, and that consequently, is able to advantageously both retrofit an installed lock by the expedient of replacing only the cylinder plug *without any* alteration of the shell and to *interact or cooperate with* an existing sidebar of a primary mechanical locking mechanism that is positioned between the shell and plug. The fact that both Gockebay '777 and Thordmark '274 are concerned with retrofitting of existing locks, a fact noted by the Examiner, and that both references require modification of the shell of the lock in order to complete that retrofitting, while Appellant alone provides a cylinder plug that may work with an existing sidebar and may be retrofit without any modification of the shell is a difference between the prior art and the structure defined by the pending claims that prevents the subject matter as a whole from being obviousness under 35 U.S.C. §103. This deficiency in the Examiner's proposed combination is not remedied by Naveda '127. Moreover, this deficiency is highlighted by the fact that Thordmark '274 clearly avoids either teaching or suggestion of any interaction or cooperation between sidebar 7 and coil 17.

This interaction with an existing sidebar beneficially enhances the security provided by Appellant's lock. Neither Gockebay '777, Thordmark '274 nor Naveda '127, nor the Examiner's proposed combination of Gockebay '777, Thordmark '274 and Naveda '127 are able to provide these advantages. Moreover, the Examiner's proposed combination is incomplete and fails to make a *prima facie* showing of obviousness; how, for example, is the traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777? No details of such a combination are provided by the Examiner's proposed combination. Accordingly, in view of these differences between the pending claims and the prior art, "the subject matter as a whole" can not be found to be rendered obvious under 35 U.S.C. §103. In short, the Examiner has unfairly sought to limit the scope of coverage to which Appellant is entitled by reconstructing the art in an effort to meet the terms of Appellant's claims when none of that art suggests such a simple modification of the art as Appellant's electrical operator being both borne by and rotating with the cylinder plug *and* operating to block the travel of a sidebar. Accordingly, reversal of this rejection is required.

#### **Claim 95**

Claim 95 was rejected under 35 U.S.C. §103(a) as rendered obvious by the same proposed combination of Gokcebay '777 and Thordmark '274 . Appellant respectfully traverses this rejection for all the reasons set forth in the foregoing paragraphs.

Additionally, Appellant notes that the Examiner's proposed combination is devoid of such as further patentably distinguishing features as Appellant's "locking mechanism" that is "interposed between said cylinder plug and said bar." The absence of a *prima facie* showing of



obviousness characterizing the administrative record before the Board may be best exhibited by a careful examination of both the references that the Examiner has repeatedly misrepresented in the examination. Neither those references may be said by the Examiner to accomplish in combination, what neither accomplishes alone. Even if by some rogue interpretation of §103 unsupported by either by the Commissioner or 35 U.S.C. §103 the Examiner is able to provide the Appellant's electrical operator bore by the cylinder plug, the Examiner is not able to demonstrate a locking mechanism that is "interposed between said cylinder plug and said plug." Appellant questions which noun in the phrase "locking mechanism" is not understood. This clear definition of cooperation between the several elements of Appellant's claim 95 provides both primary and secondary security, in the manner neither in vision nor suggested by the Examiner's proposed combination. Accordingly, claim 95 is separately patentably distinguishable and allowable. Reversal of the rejection is required.

#### **Claim 105**

Claim 105 defines a geometric construct between orientation of a side bar travel and a movement of a locking member. In the Examiner's proposed combination including the two secondary references, this construct can not be met, evidence of a lack of a *prima facie* showing of obviousness. Moreover, incorporation of this construct into the primary reference would impermissibly prevent its solenoid from engaging the shell, thereby defeating its independent locking movement, further evidence of non-obviousness. This rejection should not be sustained.

**Claims 108, 109, 111 And 113 Through 116**

Dependent claims 108, 109, 111 and 113 through 116 were rejected under 35 U.S.C. §103(a) as rendered obvious by the proposed combination of Gokcebay '777 modified according to the Thordmark U.S. 5,542,274 in view of Naveda U.S. 4,416,127. These claims require a bar, or sidebar, "engaging both said shell and said cylinder plug during said rotation." In contradistinction, the Examiner's proposed combination modifies the single solenoid of the primary reference with an unknown structure, that necessarily requires a bar, or sidebar, wholly external to the cylinder plug, and which can not engage both the shell and cylinder plug during rotation. Moreover, in the proposed combination including Naveda '127, as in Thordmark '272, all moving parts, including bars, or sidebars, are wholly external to the cylinder plug. The record before the Board is utterly devoid of evidence providing motivation for interposing any of these moving parts between the shell and cylinder plug during rotation; in point of fact, the movable parts of Naveda '127 (which teaches a "bolt" type lock, as opposed to a cylinder lock) such as pinion 37, spring 38 and pinion 40, are located in the casemate of the lock, wholly divorce from the key and keyway which would normally characterize a cylinder lock. Which of those parts of Naveda '127 would have utility when incorporated into the primary reference is unknown. Equally lacking in Naveda '127, as in Thordmark '272, is motivation for incorporating any of its parts between the cylinder plug and shell during rotation; the primary reference does not benefit from such a modification. Appellant along, unlike either the primary reference and unlike Naveda '127 and Thordmark '272, teaches interposition of a bar, or sidebar, which may be advantageously employed in cooperation with a separate locking mechanism. Both the

primary reference and Thordmark '272 teaching auxiliary locking mechanism that are wholly divorced and physically separate from their mechanical locking mechanisms.<sup>74</sup> Consequently, there is no basis for such a modification of the primary reference except an impermissible hindsight reconstruction of the art in the light provided by Appellant alone. The Board is therefore, respectfully requested to refuse to sustain this rejection.

### **Claims 119 And 120**

Appellant notes that claim 119 is a copy of claim 1 of Field '307, and that claim 120 is a copy of claim 14 of the Field '307 patent. The several components have been previously identified in the Appellant's earlier filed responses. Appellant further notes that dependent claim 119 is directed to the language on lines 7-18 of column 9, it is copied from claim 1 of Field '307 patent. Consequently, claims 119 and 120 are identical to claims 1 and 14 of Field '307 patent. This language was previously presented within the one year period of time, and the language from claim 1 of Field '307 was removed because it is not believed to be technically accurate. Given the allowance of claims 1 and 14 of Field '307, over the same art now asserted by the Examiner, there is no basis for maintaining this rejection.

### **Claim 121**

Claim 121 defines a structure with "a bar interposed between said shell and said cylinder plug detent extending radially from a second recess within said shell into a passage within said cylinder plug to create an obstruction to rotation of said cylinder plug ..." in combination with

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In the language of Thordmark '272, these two locking mechanism are "two or more mutually independent lock functions." Col. 3, lines 8 and 9.

a “cylinder plug comprising ... an electrical operator borne by said cylinder plug and rotatable with said cylinder plug, said electrical operator being electrically operable to respond to a control signal by moving independently of said detent between one of a first orientation accommodating relative movement between said detent and said cylinder plug and a second and different orientation maintaining obstruction of said relative movement by engaging said detent ... .” In addition to the deficiencies in the record noted in the foregoing several pages of this Brief, the Examiner’s proposed combination is wholly devoid of any structure able to implement Appellant’s “moving independently” without both preventing the primary reference from operating in its intended mode, and disregarding the specific structural teachings of the two secondary references. In other words, the record fails to show either a *prima facie* teaching or obviousness or motivation necessary to construct the Examiner’s proposed combination. The Board is therefore urged to refuse to sustain this rejection.

## IX. CONCLUSION

35 U.S.C. §103 requires consideration of whether the differences between the subject matter defined by each pending claim and the prior art are such that the “subject matter as a whole” would have been obvious? Under U.S. practice, “[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. *In re Fritch*, 972 F.2d 1260, 1266, n.14, 23 USPQ2d 1780, 1783-84, n.14 (Fed Cir. 1992), citing *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). It is further established that the Examiner must

make specific findings on a suggestion to combine prior art references. *In re Dembiczak*, 175 F.3d 994, 1000-01, 50 USPQ2d 1614, 1617-19 (Fed. Cir. 1999).

As demonstrated the by foregoing paragraphs, the Examiner has focused not on the subject matter of Appellant's claims as a whole, but has focused upon individual limitations. Ostensibly, the prior art relied upon by the Examiner endeavors to provide a lock that may be easily retrofitted. Gokcebay '777 however, requires that a bore 50 be drilled within the shell of the existing lock while Thordmark '274 requires that a separate V-shaped groove 3c that is spaced-apart and distinct from the slot for sidebar 7, be machined within the cylinder, and that the entire recess shown in Figure 1 be machined into the shell. Contrary to the Examiner's assertions, neither Naveda '127 nor Thordmark '274 nor Gockebay '777 advocates both insertion of an electrical operator into the cylinder plug and some interaction between that plug borne operator and a bar, elongated member or sidebar that is able to make simultaneous engagement of both the shell and cylinder plug, because:

- Gockebay '777 teaches only insertion of a solenoid within the cylinder,
- Gockebay '777 is wholly devoid of any bar (other than the armature 18 that is itself a part of solenoid 17),
- Gockebay '777 is wholly devoid of any bar that provides any type of engagement between the shell and cylinder,
- Thordmark '274 teaches nothing about insertion of any operator within the cylinder,
- both Gockebay '777 and Thordmark '274 require not only complete replacement of the cylinder, but major alteration of the shell in order to accommodate a retrofit,

- both Gockebay '777 and Thordmark '274 are utterly incapable of providing any interaction with their primary locking mechanical features, and
- Naveda '127 is singularly devoid of any teaching of a cylinder plug and discloses no primary mechanical locking mechanism as is required by both Gockebay '777 and Thordmark '274,
- Naveda '127 fails to describe how traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777.

In contradistinction, Appellant's claims define a structure with an electrical operator borne by the cylinder plug, a member moving in response to the operator, and interaction between the operator and a bar, elongate member or sidebar interposed between the shell and the cylinder plug. Although these differences may appear to be but a small advance in the art, the advantages flowing from these differences are substantial. For example, only Appellant's claims define a structure with an electronic operator borne by the cylinder plug that interacts with a sidebar, elongate member or bar, and that consequently, is able to advantageously both retrofit an installed lock by the expedient of replacing only the cylinder plug *without any* alteration of the shell and to *interact or cooperate with* an existing sidebar of a primary mechanical locking mechanism that is positioned between the shell and plug. The fact that both Gockebay '777 and Thordmark '274 are concerned with retrofitting of existing locks, a fact noted by the Examiner, and that both references require modification of the shell of the lock in order to complete that retrofitting, while Appellant alone provides a cylinder plug that may work with an existing sidebar and may be retrofit without any modification of the shell is a difference between the prior

art and the structure defined by the pending claims that prevents the subject matter as a whole from being obviousness under 35 U.S.C. §103. This deficiency in the Examiner's proposed combination is not remedied by Naveda '127. Moreover, this deficiency is highlighted by the fact that Thordmark '274 clearly avoids either teaching or suggestion of any interaction or cooperation between sidebar 7 and coil 17.

This interaction with the existing sidebar beneficially enhances the security provided by Appellant's lock. Neither Gockebay '777, Thordmark '274 nor Naveda '127, nor the Examiner's proposed combination of Gockebay '777, Thordmark '274 and Naveda '127 are able to provide these advantages. Moreover, the Examiner's proposed combination is incomplete and fails to make a *prima facie* showing of obviousness; how, for example, is the traveling coil 17, armature 18 and latching element 10 of Fig. 7 of Thordmark '274 incorporated into the plug of Gockebay '777? No details of such a combination are provided by the Examiner's proposed combination. Accordingly, in view of these differences between the pending claims and the prior art, "the subject matter as a whole" can not be found to be rendered obvious under 35 U.S.C. §103. In short, the Examiner has unfairly sought to limit the scope of coverage to which Appellant is entitled by reconstructing the art in an effort to meet the terms of Appellant's claims when none of that art suggests such a simple modification of the art as Appellant's electrical operator being both borne by and rotating with the cylinder plug *and* operating to block the travel of a sidebar. Evidence of that error in the formation of the Examiner's proposed combination lies in the fact that the proposed combination is depends upon a primary reference that discloses numerous embodiments of an invention, but none of those several embodiments derive any

advantage from the modifications required to construct the Examiner's proposed combination; those modifications simply produce a more cumbersome structure with more parts that accomplishes nothing that the primary reference does not achieve without those modifications. This is evidence of a lack of motivation in the art to make the modifications necessary to construct the Examiner's proposed combination, as well as evidence that the Examiner is simply using Appellant's claims as a blueprint in an impermissible effort to make a hindsight reconstruction of the art.

Perhaps the proposed combination of Gokcebay 777, Thordmark, *et al.* '274 and Naveda '217 was formed on the reverse side of the "looking glass", out of sight of the intrinsic limitations of the proposed combination, guided only by Appellant's contribution to the art, and without consideration of the pending claims in their entirety:<sup>75</sup>

- By way of example, the Examiner's proposed combination including Gokcebay 777 is not a pioneering patent. Gokcebay '777 itself teaches, at some length, that it is an improvement over Appellant's earlier U.S. Patent No. 5.140.317.<sup>76</sup> Gokcebay '777 however, in seeking to improve upon Mr. Hyatt's, that is, the Appellant's, earlier efforts in the art, places a premium upon extreme

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<sup>75</sup> 35 U.S.C. §103(a) mandates consideration of the *subject matter as a whole* in a determination of obviousness. A point-of-novelty test is improper.

<sup>76</sup> Gokcebay, *et al.*, '777, see the entirety of column 2, lines 7 through 54, devoted to an analysis by the Examiner's primary reference, of Appellant's earlier U.S. Patent No. 5.140.317.



compactness<sup>77</sup> of his electronic access control that is physically irreconcilable with the demands of the secondary references for unrestricted axial length of its “mutually independent lock functions.”<sup>78</sup> The primary reference, in his efforts to follow the teachings of Appellant, concentrates his structure within his cylinder plug 24 to offer a structure “in an extremely compact fashion”<sup>79</sup> for which “[n]o additional space is required to implement the system of the invention.”<sup>80</sup> The Examiner’s proposed combination however, as represented by Thordmark, *et al.* ‘274 and Naveda ‘217, dwells wholly outside the cylinder plug and demands,

“a latching element 10 [the configuration of which] can vary within wide limits ... [and] its length may vary but preferably it exceeds half the axial length of the plug and may – as in the illustrated embodiments — often substantially correspond to the axial length of the plug.”<sup>81</sup>

This disharmony, attributable to both the radial versus axial orientation in the primary and secondary references, as well as to the gross differences in size

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<sup>77</sup> Gokcebay, *et al.*, ‘777, see column 3, lines 1 through 5, as well as column 4, lines 39 through 41.

<sup>78</sup> Thordmark, *et al.* ‘274, column 2, lines 66 and 67, and column 3, line 9.

<sup>79</sup> Gokcebay, *et al.*, ‘777, see column 4, line 39.

<sup>80</sup> Gokcebay, *et al.*, ‘777, see column 4, lines 41, 42. As taught by the primary reference, his lock “has an electronic access feature which occupies no more space than the mechanical lock itself. **Nothing** is required outside the lock cylinder ... **aside from** a small recess or bore [*i.e.*, bore 50] which is provided in the cylinder shell.” Gokcebay, *et al.*, ‘777, see column 3, lines 1 through 5.

<sup>81</sup> Thordmark, *et al.* ‘274, see column 6, lines 18 through 25, together with column 4, lines 20 through 23.

relative to the cylinder plug in the primary and secondary references, and to the insistence of the primary reference that “[n]othing is required outside the lock cylinder”<sup>82</sup> versus the demand of the secondary references that all moving parts be required to be on the outside of the lock cylinder, is irreconcilable, and impermissibly prevents the primary reference from being practiced in its intended mode of operation, contrary to the practice under 35 U.S.C. §103(a). Consequently, the primary reference may not be modified according to the teachings of the secondary references.

- By way of a second example, Gokcebay ‘777 dwells upon direct engagement between the cylinder plug and its surrounding shell in an effort to provide, “in an extremely compact fashion, electronic access control to a conventional mechanical lock”<sup>83</sup> with “a bore or recess 50 [cut into cylinder shell 46] into which the blocking pin 38 extends in the blocking position.”<sup>84</sup> In the Examiner’s proposed combination including Thordmark, *et al.* ‘274, the entirety of “latching element 10” having a certain axial length, “coacts with a blocking element” 11 which is

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<sup>82</sup> Gokcebay *et al.* ‘777, see column 3, lines 2 and 3.

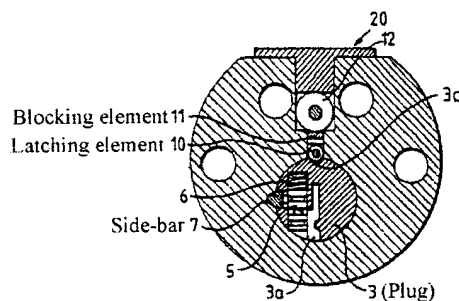
<sup>83</sup> Gokcebay, *et al.*, ‘777, see column 4, lines 39 and 40.

<sup>84</sup> Gokcebay, *et al.*, ‘777 see column 6, lines 45 through 48.

“conveniently moved axially by means of an electric motor, an electromagnet, a solenoid ...” is encased within “a lock cylinder 2”, to indirectly engage “plug 3”; this entirety is taught by the Examiner’s proposed combination to be one of two, or more, “**mutually independent** latching or blocking devices.”<sup>85</sup> Completely absent from the Examiner’s proposed combination is any direct locking, or

Thordmark et al. U.S. Patent No. 5542274

Figure 3



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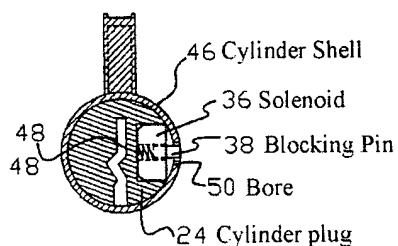
<sup>85</sup> Thordmark, *et al.* '274, column 2, lines 66 and 67, and column 3, lines 8 through 10.

latching, or blocking function achieved between “lock cylinder 2” and “plug 3” with the direct engagement taught by the primary reference, because the proposed combination teaches that its electrically activated latching or blocking device is devoid of either structural or functional relation to “side-bar 7.”

This divergence by the secondary references from the teaching by the primary reference of a solenoid to achieve direct engagement between the cylinder plug 24 and bore 50 in the surrounding cylinder shell 46,

**Gokcebay et al. U.S. Patent No. 5552777**

**Figure 5**



in addition to irreconcilability between the teachings of the primary reference on “extremely compact fashion” and the demand by the secondary references in the proposed combination for a latching element 10 of a certain axial length, deprives the prior art of all evidence of motivation for making the Examiner’s proposed combination. The various teachings of the several component references in the Examiner’s proposed combination are irreconcilable on the features

defined by the finally rejected claims.<sup>86</sup> Although the prior art may contain all of the constituent

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**Claim 46:** "said cylinder plug comprising ... an electrical operator ... obstructing movement of said bar ... ."

**Claim 56:** "an elongate member interposed between said shell and said plug to travel ... said plug comprising ... an electrical operator ... obstructing said travel ... ."

**Claim 64:** "a sidebar interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... ."

**Claim 70:** "a bar interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... ."

**Claim 76:** "an elongate bar ... interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... ."

**Claim 77:** "an elongate bar ... interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... ."

**Claim 85:** "a side bar cooperating between the shell and the barrel ... at least one electromechanical locking member is disposed within the barrel ... an electronically powered drive mechanism located within the barrel and cooperating with the electromechanical locking member to selectively move the locking member ... in which the side bar moves ... ."

**Claim 89:** "an elongate ... barrel member ... containing an electromechanical locking member ... disposed in the recess of the barrel member ... an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking member ... ."

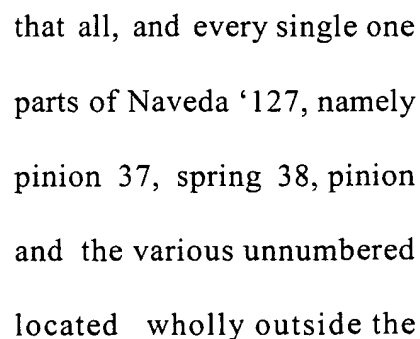
**Claim 90:** "providing an electronically powered rotatable barrel ... including: at least one electromechanical locking member disposed in the barrel ... positionable to permit the side bar to engage the locking member ... ."

**Claim 91:** "a bar interposed between said shell and said cylinder plug to reciprocate ... a locking mechanism borne by said cylinder plug ... hindering said reciprocation ... and an electrical operator borne by said cylinder plug ... providing obstruction of said reciprocation by said bar ... ."

**Claim 120:** "an elongated ... barrel member ... containing a plurality of electromechanical locking members ..., each of the locking members including a groove ... [and] an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking members to a position in which the grooves of the locking members are aligned."

**Claim 121:** "a bar interposed between said shell and said cylinder plug detent extending radially from a second recess within said shell ...; said cylinder plug comprising ... and electrical operator borne by said cylinder plug ... moving ... between ... a second and different orientation maintaining obstruction of said relative movement by engaging said detent ... ."

- Naveda U.S. Patent No. 4416127**  
**Figure 10**



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circumference of key receiver 34,<sup>88</sup> unlike the structure defined by the pending claims.<sup>89</sup> At issue

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<sup>88</sup> See Figure 10, of Naveda '127.

<sup>89</sup> **Claim 46:** "a bar borne by said plug ... said cylinder plug comprising: ... an electrical operator... ."

**Claim 56:** "an elongate member interposed between said shell and said plug to travel ... said plug comprising ... an electrical operator ... ."

**Claim 64:** "a sidebar interposed between said shell and said cylinder plug to travel ...; and an electrical operator borne by said cylinder plug ... ."

**Claim 70:** "a bar interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... ."

**Claim 76:** "an elongate bar ... interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... ."

**Claim 77:** "an elongate bar ... interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... ."

**Claim 85:** "a side bar cooperating between the shell and the barrel ... at least one electromechanical locking member is disposed within the barrel ... an electronically powered drive mechanism located within the barrel and cooperating with the electromechanical locking member to selectively move the locking member ... in which the side bar moves ... ."

**Claim 89:** "an elongate ... barrel member ... containing an electromechanical locking member ... disposed in the recess of the barrel member ... an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking member ... ."

**Claim 90:** "providing an electronically powered rotatable barrel ... including: at least one electromechanical locking member disposed in the barrel ... positionable to permit the side bar to engage the locking member ... ."

**Claim 91:** "a bar interposed between said shell and said cylinder plug to reciprocate ... a locking mechanism borne by said cylinder plug ... hindering said reciprocation ... and an electrical operator borne by said cylinder plug ... providing obstruction of said reciprocation by said bar ... ."

**Claim 120:** "an elongated ... barrel member ... containing a plurality of electromechanical locking members ..., each of the locking members including a groove ... [and] an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking members to a position in which the grooves of the locking members are aligned."

**Claim 121:** "a bar interposed between said shell and said cylinder plug detent extending radially from a second recess within said shell ...; said cylinder plug comprising ... and electrical operator borne by said cylinder plug ... moving ... between ... a second and different orientation maintaining obstruction of said relative movement by engaging said detent ... ."

before the Board is what evidence of record provides motivation for incorporating the moving parts found on the exteriors of the structures in the secondary references into the interior of the cylinder plug? The primary reference itself, which limits “an electronic access feature ... [to occupancy of] no more space than the mechanical lock itself,”<sup>90</sup> may not be read to provide that motivation.

Turning now to consideration of exemplars of deficiencies of the evidence in the administrative record before the Board which were noted earlier in the paper, these deficiencies in the evidence must be considered under the criterion set forth by the Court in *In re Sang-Su Lee*, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002).<sup>91</sup>

- By way of an additional example, the Examining Staff has sought to find motivation to incorporate the Thordmark, *et al.* ‘274 and Naveda ‘217 references into the structure of Gokcebay ‘777, despite the fact that Gokcebay ‘777, in teaching his improvements over Appellant’s ‘317 patent, twice teaches against a structure such as that of Naveda ‘217 where the lock’s system “would take up space within the ... lock casing adjacent to the lock.”<sup>92</sup> Despite this caution by

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<sup>90</sup> Gokcebay, *et al.*, ‘777 see column 3, lines 1 through 6, together with column 2, lines 53 and 54, column 4, lines 40 through 43, and column 10, lines 10 through 15.

<sup>91</sup> “Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the teaching or suggestion to combine prior art references. ... The need for specificity pervades this authority.” *In re Sang-Su Lee*, 61 U.S.P.Q.2d @1433 (Fed. Cir. 2002).

<sup>92</sup> See Gokcebay, *et al.*, ‘777, at col. 2, lines 39-40 (“the system of the patent [referring to Appellant’s earlier ‘317 patent] requires additional hardware within the lock casing ...”) and col. 2, lines 52-54 (“which avoids the need for electronics, solenoids or other hardware which would *take up space within the ... lock casing adjacent to the lock*”).



Fig. 1 is a schematic diagram of a key receiver assembly. The diagram shows a vertical shaft (35) passing through a housing. At the top, a key receiver (34) is mounted. Below it, a pinion (37) is connected to the shaft. A spring (38) is positioned between the pinion (37) and a pinion (39). A bolt (41) is used to secure the pinion (39) to a base (33). A pinion (40) is also shown, connected to the bolt (41). A key (42) is inserted into the key receiver (34).

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claims 120 and 121.<sup>93</sup> The fact that the sole motivation for such a construction is found in Appellant's claims, is convincing indicia of obviousness *vel non*.

- By way of a second additional example, the Examining Staff has ignored the complete absence from the art of any motivation provided by either Thordmark, *et al.* '274 or Naveda '217, or by Thordmark, *et al.* '274 and Naveda '217 in combination, to incorporate into the cylinder plug of the Examiner's proposed combination any constituent component other than the solenoid taught by the primary reference, and therefore lacks appellant's cooperation between an electrical operator borne by the cylinder plug and cooperating with a bar.
- By way of a third further example, the Examiner's proposed combination including Gokcebay '777 teaches that the embodiment illustrated in Figures 3, 4 and 5 "allows for secondary locking 'high security' mechanical features,"<sup>94</sup> but is utterly devoid of any teaching or suggestion for structural or functional cooperation between these "secondary locking 'high security' mechanical

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<sup>93</sup> **Claim 56:** "an electrical operator ... obstructing said travel and relative operable movement between said shell and said plug *while* said electrical operator is *contained wholly within said plug ...*" In contradistinction the armature (*i.e.*, "block pin 38") of the primary reference would lack utility if its electrical operator was *wholly within said plug* during its locking situation, because the distal end of that electrical operator must extend completely through and beyond the cylinder plug and into bore 50 within the shell. See Gokcebay, *et al.*, '777, at column 6, lines 45 and 46.

<sup>94</sup> Gokcebay, *et al.*, '777, column 6, lines 54 and 55.

features” and his “conventional lock cylinder 20”, while Thordmark, *et al.* ‘274 teaches “locks which include two or more *mutually independent* latching or blocking devices, of which one can be activated electrically”<sup>95</sup> and “a lock of the kind ... which has two or more *mutually independent* lock functions”,<sup>96</sup> and Nevada ‘127 teaches but a single magnetic lock. Only Appellant’s claims 46, 56 and 64, which when integrated into a conventional locking mechanism, advantageously both (i) recognize the innate deficiencies in locking structure devoted to preserving the mutually independency (as well as the secondariness of Gokcebay ‘777’s “secondary locking”<sup>97</sup> of the lock functions in the prior art and (ii) provide “latching or blocking devices, of which one can be activated electrically”<sup>98</sup> and, unlike the prior art, may be integrated to cooperate in reinforcing the locking function of both locking mechanisms,<sup>99</sup> or alternatively,

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<sup>95</sup> Thordmark, *et al.* ‘274, column 2, line 66 through column 3, line 1.

<sup>96</sup> Thordmark, *et al.* ‘274, column 3, line 9.

<sup>97</sup> Gokcebay, *et al.*, ‘777, column 6, line 54.

<sup>98</sup> Thordmark, *et al.* ‘274, column 2, line 66 through column 3, line 1.

<sup>99</sup> It is not customary in U.S. practice to define the advantages that result from a novel structure, such as those advantages provided by a structure such as Appellant’s that flow from positioning an electrical operator to interact with a bar, detent or sidebar; the language of **Claim 64** expressly encompass such a structure and is worded to read: “said sidebar having a first portion that is positioned to be optionally block by another component of said lock functioning independently of said electrical operator to prevent said travel by said sidebar, and a second portion that is positioned to be blocked from said travel by said sidebar to said second position whenever said electrical operator is within said first orientation ... .”

be selectively controlled to allow the mutual independency of the prior art.

- By way of a fourth example, the embodiment of Figures 3, 4 and 5 of the primary reference in the proposed combination teaches “a bore or recess 50 into which the blocking pin 38 extends in the blocking position.”<sup>100</sup> Incorporation of any component of the secondary references into the primary reference impermissibly destroys the ability of the primary reference to operate in its intended mode of operation with “bore or recess 50 into which the blocking pin 38 extends,”<sup>101</sup> because such an incorporation would inherently block bore 50. This inconsistency is further evidence of non-obviousness.
- By way of a fifth example, incorporation of any component of the secondary references into the embodiment of Figures 3, 4 and 5 of the primary reference in the proposed combination which teaches “a bore or recess 50 into which the blocking pin 38 extends in the blocking position”<sup>102</sup> is a distortion of the teachings of the primary references because Thordmark, *et al.* ‘274 already teaches “a lock cylinder 2 which accommodates a plug 3 ... [and] a side-bar 7 [which] is able to

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<sup>100</sup> Gokcebay, *et al.*, ‘777, column 6, lines 44 and 46.

<sup>101</sup> Gokcebay, *et al.*, ‘777, column 6, lines 44 and 46.

<sup>102</sup> Gokcebay, *et al.*, ‘777, column 6, lines 44 and 46.

move radially inward in the plug, so as to enable the plug to be rotated”<sup>103</sup>, and preserves that “side bar 7” entirely **mutually independent**<sup>104</sup> from the operation of “latching element 10”, “blocking element 11”, “electric motor 12” and “electromagnet 17”, unlike the structure defined by the pending claims.<sup>105</sup>

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<sup>103</sup> Thordmark, *et al.* ‘274, column 4, lines 57-66.

<sup>104</sup> Thordmark, *et al.* ‘274, column 2, line 67, and column 3, line 9.

<sup>105</sup> **Claim 46:** “said cylinder plug comprising ... an electrical operator ... obstructing movement of said bar ... .”

**Claim 56:** “an elongate member interposed between said shell and said plug to travel ... said plug comprising ... an electrical operator ... obstructing said travel ... .”

**Claim 64:** “a sidebar interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... .”

**Claim 70:** “a bar interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... .”

**Claim 76:** “an elongate bar ... interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel... .”

**Claim 77:** “an elongate bar ... interposed between said shell and said cylinder plug to travel ... an electrical operator borne by said cylinder plug ... providing obstruction of said travel ... .”

**Claim 85:** “a side bar cooperating between the shell and the barrel ... at least one electromechanical locking member is disposed within the barrel ... an electronically powered drive mechanism located within the barrel and cooperating with the electromechanical locking member to selectively move the locking member ... in which the side bar moves ... .”

**Claim 89:** “an elongate ... barrel member ... containing an electromechanical locking member ... disposed in the recess of the barrel member ... an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking member ... .”

**Claim 90:** “providing an electronically powered rotatable barrel ... including: at least one electromechanical locking member disposed in the barrel ... positionable to permit the side bar to engage the locking member ... .”

**Claim 91:** “a bar interposed between said shell and said cylinder plug to reciprocate ... a locking mechanism borne by said cylinder plug ... hindering said reciprocation ... and an electrical operator borne by said cylinder plug ... providing obstruction of said

- By way of a sixth example, the Examiner's proposed combination relies entirely upon electrically energy to move external blocking pin 38 of Gokcebay, *et al.*, '777, to move external blocking element 11 of Thordmark, *et al.*, '274 and to move external pinion 37 of Naveda '127. In contradistinction, Appellant relies is able to use the "torque that is externally applied to said plug and causes rotation of said plug within said shell."<sup>106</sup> There is no evidence of motivation present in the record before the Board to modify the primary reference to rely upon externally applied torque to remove "blocking pin 38" from bore 50. Consequently, there is no basis in the record for sustaining the final rejection of claims 46, 56, 64, 70, 76, 77, 90, 91, 120 or 121.

An improvement made in such a very crowded and ancient art is further evidence of non-obviousness. Consequently, reversal of this rejection and allowance of claims 46 through 52, 54, 56, 64, 70, 76, 85, 90, 91, 105, 108, 109, 111, 113 through 116, 119, 120 and 121 is urged.

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reciprocation by said bar ... ."

**Claim 120:** "an elongated ... barrel member ... containing a plurality of electromechanical locking members ..., each of the locking members including a groove ... [and] an electronically powered drive mechanism located within the barrel member for moving the electromechanical locking members to a position in which the grooves of the locking members are aligned."

**Claim 121:** "a bar interposed between said shell and said cylinder plug detent extending radially from a second recess within said shell ..; said cylinder plug comprising ... and electrical operator borne by said cylinder plug ... moving ... between ... a second and different orientation maintaining obstruction of said relative movement by engaging said detent ... ."

Respectfully submitted,

A handwritten signature in black ink, appearing to read "R. E. Bushnell", written over a horizontal line.

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**X. APPENDIX I:**

**Claims Under Appeal**

**Claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 90-100, 105, 106, 108, 109, 111-116, 119-121**

1. (previously presented) A plug, comprising:

a first base bearing a keyway providing a first electrical conductor and an orifice spaced-apart from and separated by a mass of said plug from said keyway;

a second base separated by an axial length of said plug from said first base, said second base disposed to support a cam, said mass being perforated by a plurality of radially oriented apertures forming an array;

an exterior surface extending between and engaging said first base and said second base;

a sidebar positioned between said first base and said second base to reciprocate between a first location with said sidebar simultaneously engaging said plug and a cylinder surrounding said plug, and a second location releasing said plug for relative movement between the cylinder and said plug;

a locking mechanism disposed within said apertures to move relative to said plug in response to a key inserted into said keyway to accommodate reciprocation of said sidebar relative to said plug and rotation of said plug relative to the cylinder when the key while inserted into said keyway engages in a selected relation with said locking mechanism, and obstructing said reciprocation absent said selected relation;

a second electrical conductor terminating with an electrical contact exposed to an exterior of said first base through said orifice;

an electronic logic circuit borne by said plug while coupled to receive electrical data signals via said first and second electrical conductors, and generating control signals in dependence upon said electrical power and data signals; and

an electrical operator disposed within one of said apertures, said operator having



24 a distal member travelling in dependence upon said control signals between a first position  
25 relative to said exterior surface obstructing said relative movement by engaging a detent  
26 protruding from the cylinder, and a second and different position relative to said exterior surface  
27 accommodating said relative movement.

1 2. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator simultaneously experiencing said rotation relative to the cylinder  
3 whenever said plug rotates relative to the cylinder.

1 3. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator being wholly within the cylinder and travelling with said plug  
3 whenever said plug moves relative to the cylinder.

1 4. (previously presented) The plug of claim 1, with said electrical operator maintaining  
2 said distal member within said plug with said distal member extended not beyond said exterior  
3 surface while said distal member is in said first position, and maintaining said distal member in  
4 concurrent engagement with said plug and with the detent while said distal member is in said  
5 first position.

1 5. (previously presented) The plug of claim 1, with said electrical operator maintaining  
2 said distal member within said plug with said distal member extending not beyond said exterior  
3 surface while said distal member is in said first position, and moving said distal member radially  
4 between relative to said exterior surface in dependence upon said control signals.

1 6. (previously presented) A lock, comprising:  
2 a cylinder containing a hollow recess defining a longitudinal axis and a stationary  
3 detent extending from said cylinder;  
4 a plug bearing a plurality of open radially oriented apertures forming an array, said

5 plug being rotatable around said longitudinal axis while resident within said hollow recess, said  
6 plug comprising:

7 a first base bearing a keyway providing a first electrical conductor and an  
8 orifice spaced-apart from and separated by a mass of said plug from said keyway;

9 a second base separated by an axial length of said plug from said first base,  
10 said second base disposed to support a cam;

11 an exterior surface extending between and engaging said first base and said  
12 second base;

13 a sidebar positioned between said first base and said second base to create an  
14 obstruction to relative movement between said cylinder and said plug;

15 a locking device disposed within said apertures to release an obstruction when the  
16 key while inserted into said keyway engages in a selected relation with said locking device, and  
17 to maintain said obstruction absent said selected relation;

18 a second electrical conductor terminating with an electrical contact exposed to an  
19 exterior of said first base through said orifice;

20 an electronic logic circuit borne by said plug, coupled to receive electrical data  
21 signals via said first and second electrical conductors, and generating control signals in  
22 dependence upon said electrical power and data signals; and

23 an electrical operator borne by said plug, disposed within one of said apertures,  
24 said operator having a distal member radially traveling along an axis transverse to said  
25 longitudinal axis, in dependence upon said control signals between a first position relative to said  
26 exterior surface by engaging said detent and thereby obstructing said movement in concert with  
27 said locking device and a second and different position relative to said exterior surface  
28 accommodating said movement.

1 7. (previously presented) The plug of claim 6, comprising said locking device, logic  
2 circuit and electrical operator simultaneously experiencing said rotation relative to the cylinder  
3 whenever said plug rotates relative to the cylinder.

1           8. (previously presented) The plug of claim 6, comprising said locking device, logic  
2 circuit and electrical operator being wholly within the cylinder and travelling with said plug  
3 whenever said plug moves relative to the cylinder.

1           9. (previously presented) The plug of claim 6, with said electrical operator maintaining  
2 said distal member within said plug with said distal member extended not beyond said exterior  
3 surface while said distal member is in said second position, and maintaining said distal member  
4 in engagement with said detent while said distal member is in said first position.

1           10. (previously presented) The plug of claim 6, with said electrical operator maintaining  
2 said distal member within said plug with said distal member extending not beyond said exterior  
3 surface while said distal member is in said first position.

1           11. (previously presented) A lock, comprising:  
2           a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface, said shell bearing a detent extending into said shell;

4           a plug rotatable around said longitudinal axis while resident within said hollow  
5 recess, and a bar interposed between said shell and said plug generally along a radial plane  
6 engaging both said shell and said plug while obstructing rotation of said plug within said recess,  
7 said plug comprising:

8                   a first base providing a first electrical conductor;

9                   a second base separated by an axial length of said plug from said first base;

10                  an exterior surface extending between and engaging said first base and said  
11 second base;

12                  a locking device responsive to a key inserted into said keyway  
13 accommodating relative movement between said shell and said plug when the key while  
14 inserted into said keyway engages in a selected relation with said locking device and

15 obstructing said relative movement absent said selected relation;

16 a second electrical conductor terminating with an electrical contact exposed  
17 to an exterior of said first base through said orifice;

18 an electronic logic circuit coupled to receive electrical data signals via said  
19 first and second electrical conductors, and generating control signals in dependence upon  
20 said data signals; and

21 an electrical operator having a distal member moving relative to said  
22 detent, in dependence upon said control signals between a first orientation relative to said  
23 exterior surface enabling said relative movement and a second and different orientation  
24 relative to said exterior surface obstructing said relative movement when said distal  
25 member at least partially surrounds said detent.

1 12. (previously presented) The plug of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in  
4 response to said control signals; and

5 said distal member bearing a circumferential surface blocking said relative  
6 movement while said distal member is in said second position, and a variation in said  
7 circumferential surface accommodating said relative movement while said distal member is in  
8 said first position.

1 13. (previously presented) The plug of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in  
4 response to said control signals; and

5 distal member bearing a circumferential surface engaging said detent while said  
6 distal member is in said second position, and a variation in said circumferential surface  
7 accommodating said relative movement while said distal member is in said first position.

1           14. (previously presented) A lock, comprising:

2                   a cylinder containing a hollow interior recess defining a longitudinal axis, and  
3           bearing a slot within said recess; and

4                   a plug rotatable from a rest orientation around said longitudinal axis while resident  
5           within said hollow recess relative to said cylinder; and

6                   a stationary detent positioned between a first end and second end while extending  
7           into said slot, and providing simultaneous engagement of said cylinder and said plug while said  
8           cylinder remains in said rest orientation;

9                   said plug comprising:

10                   a first base bearing an opening accommodating insertion of a key and  
11           providing a first electrical conductor;

12                   a second base separated by an axial length of said plug from said first base,  
13           said second base disposed to support a cam, said mass being perforated by a an aperture;

14                   an exterior surface extending between said first base and said second base;  
15                   retaining means oriented to retain a shank of a key inserted into said  
16           opening while said plug remains in an orientation other than said rest orientation relative  
17           to said cylinder, and to accommodate reversal of the key from said opening while said  
18           plug is in said rest orientation;

19                   a second electrical conductor terminating with an electrical contact exposed  
20           to an exterior of said first base through said orifice;

21                   an electronic logic circuit comprising a memory storing a code, said circuit  
22           being borne by said plug and coupled to receive electrical data signals via said first and  
23           second electrical conductors, said circuit generating control signals in dependence upon  
24           correspondence between said code and information borne by said data signals; and

25                   an electrical operator borne by said plug, said operator having a distal  
26           member travelling in dependence upon said control signals between a first position  
27           relative to said exterior surface maintaining engagement of said detent and a second and

28 different position relative to said exterior surface accommodating movement between  
29 said plug and said cylinder.

1 15. (previously presented) The lock of claim 14, further comprising:

2 said detent being borne by said cylinder; and

3 said distal member being oriented within said plug to move relative to said plug  
4 to accommodate rotation of said plug from said rest orientation relative to the cylinder when a  
5 key while inserted into said opening generates said data signals representing information having  
6 a selected said correspondence with said code, and obstructing said rotation absent said selected  
7 correspondence.

1 16. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug  
5 to accommodate passage of said tooth relative to said distal member during rotation of said plug  
6 from said rest orientation relative to the cylinder when a key while inserted into said opening  
7 generates said data signals representing information having a selected said correspondence with  
8 said code, and obstructing said rotation of said plug from said rest orientation by engaging said  
9 tooth absent said selected correspondence.

1 17. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug  
5 to accommodate passage of said tooth relative to said distal member during rotation of said plug  
6 from said rest orientation relative to the cylinder when a key while inserted into said opening  
7 generates said data signals representing information having a selected said correspondence with

8 said code, obstructing said rotation of said plug from said rest orientation by engaging said tooth  
9 absent said selected correspondence, and accommodating passage of said tooth relative to said  
10 distal member during rotation of said plug from an orientation other than said rest orientation  
11 to said rest orientation.

1 18. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug  
5 to accommodate passage of said tooth relative to said distal member during rotation of said plug  
6 from said rest orientation relative to the cylinder when a key while inserted into said opening  
7 generates said data signals representing information having a selected said correspondence with  
8 said code, and obstructing said rotation of said plug from said rest orientation by engaging said  
9 tooth absent said selected correspondence when said rotation is in a first direction, and  
10 accommodating said rotation of said plug from said rest orientation despite an absence of said  
11 selected correspondence when said rotation is in a second and opposite direction.

1 19. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug in an engagement of said tooth  
5 to obstruct said rotation of said plug from said rest orientation, and to move relative to said plug  
6 from said engagement of said tooth obstructing said rotation of said plug from said rest  
7 orientation to an accommodation of passage of said tooth relative to said distal member during  
8 rotation of said plug from said rest orientation relative to the cylinder when a key while inserted  
9 into said opening generates said data signals representing information having a selected said  
10 correspondence with said code, and continuing said accommodation despite intermittent removal  
11 of the key from said opening.

1           20. (previously presented) The lock of claim 14, further comprising:

2               said detent comprising an arm arcuately engaging said cylinder and a tooth  
3           extending from said arm and through said slot; and

4               said distal member being oriented within said plug in an engagement of said tooth  
5           to obstruct said rotation of said plug from said rest orientation, and to move relative to said plug  
6           from said engagement of said tooth obstructing said rotation of said plug from said rest  
7           orientation to an accommodation of passage of said tooth relative to said distal member during  
8           rotation of said plug from said rest orientation relative to the cylinder when a key while inserted  
9           into said keyway generates said data signals representing information having a selected said  
10          correspondence with said code, and continuing said accommodation despite intermittent removal  
11          of the key from said opening absent subsequent said generation of data signals representing  
12          information having said selected correspondence with said code.

1           21. (previously presented) The lock of claim 16, further comprising:

2               a sidebar positioned between said first base and said second base to provide  
3           reciprocation between a first location with said sidebar providing simultaneous engagement with  
4           said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5           cylinder; and

6               said electrical operator comprising an electrical solenoid borne by said plug, said  
7           distal member comprising an armature travelling in dependence upon said control signals  
8           between a third position relative to said exterior surface maintaining said simultaneous  
9           engagement and a fourth and different position relative to said exterior surface accommodating  
10          said reciprocation.

1           22. (previously presented) The lock of claim 17, further comprising:

2               a sidebar positioned between said first base and said second base to provide  
3           reciprocation between a first location with said sidebar providing simultaneous engagement with



4 said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5 cylinder; and

6 said electrical operator comprising an electrical solenoid borne by said plug, said  
7 distal member comprising an armature travelling in dependence upon said control signals  
8 between a third position relative to said exterior surface maintaining said simultaneous  
9 engagement and a fourth and different position relative to said exterior surface accommodating  
10 said reciprocation.

1 23. (previously presented) The lock of claim 18, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with  
4 said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5 cylinder; and

6 said electrical operator comprising an electrical solenoid borne by said plug, said  
7 distal member comprising an armature travelling in dependence upon said control signals  
8 between a third position relative to said exterior surface maintaining said simultaneous  
9 engagement and a fourth and different position relative to said exterior surface accommodating  
10 said reciprocation.

1 24. (previously presented) The lock of claim 19, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with  
4 said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5 cylinder; and

6 said electrical operator comprising an electrical solenoid borne by said plug, said  
7 member comprising an distal armature travelling in dependence upon said control signals  
8 between a third position relative to said exterior surface maintaining said simultaneous  
9 engagement and a fourth and different position relative to said exterior surface accommodating

10 said reciprocation.

1 34. (previously presented) The lock of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response  
4 to said control signals; and

5 said distal member bearing a circumferential surface blocking said radial  
6 movement of said sidebar while said distal member is in said second position, and  
7 accommodating said radial movement while said distal member is in said first position.

1 35. (previously presented) The lock of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response  
4 to said control signals; and

5 said distal member bearing a circumferential surface blocking said radial  
6 movement of said sidebar while said distal member is in said second position, and  
7 accommodating said radial movement while said distal member is in said first position.

1 36. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass engaging said detent and blocking said rotation while said distal member is in  
3 said first position, and a groove through said mass accommodating relative passage between said  
4 distal member relative to said detent while said distal member is in said second position.

1 37. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass exhibiting a first height accommodating relative passage between said distal  
3 member relative to said detent while said distal member is in said second position, and a second  
4 and greater height engaging and blocking said rotation while said distal member is in said first  
5 position.

1           38. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass having a periphery engaging said detent and blocking said rotation while said  
3 distal member is in said first position, and a central variation in said mass relative to said  
4 periphery accommodating relative passage between said distal member and said detent while said  
distal member is in said second position.

1           46. (previously presented) A lock, comprising:

2           a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4           a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6           a bar borne by said plug and rotatable with said plug relative to said shell, said bar  
7 being interposed between said shell and said cylinder plug to reciprocate generally along a radial  
8 plane between a first position engaging both said shell and said cylinder plug while obstructing  
9 rotation of said cylinder plug within said recess, and a second position accommodating said  
10 rotation, said cylinder plug comprising:

11           a first base and a second base separated by an axial length of said plug from said  
12 first base, said second base bearing means for supporting a cam; and

13           an electrical operator being electrically operable to respond to an electrical control  
14 signal by obstructing movement of said bar between said first position and said second position  
15 in response to a first state of said control signal and by moving within a second and different  
16 plane not coextensive with said radial plane in response to application of said control signal to  
17 accommodate said movement of said bar in response to a second and different state of said  
18 control signal.

1           47. (previously presented) The lock of claim 46, further comprised of said operator  
2 directly obstructing movement of said bar between said first position and said second position

absent said control signal.

48. (previously presented) The lock of claim 46, further comprised of:

a logic circuit borne by said cylinder plug generating said control signal in response to a comparison between a code set within said logic circuit and a data signal applied to said logic circuit; and

said electrical operator moving to accommodate said movement by said bar in response to said control signal.

49. (previously presented) The lock of claim 46, further comprised of a locking mechanism borne by said cylinder plug, said cylinder plug being perforated by an aperture admitting reciprocal travel of a key relative to said locking mechanism, and said locking mechanism obstructing movement of said cylinder plug relative to said shell absent the key exhibiting a selected relation with said locking mechanism.

50. (previously presented) The lock of claim 46, further comprised of a plurality of electrical conductors borne by said lock to engage a circuit in a key inserted into said cylinder plug.

51. (previously presented) The lock of claim 46, further comprised of a power source energizing said electric operator to move during said second and different state of said control signal, positioned to rotate with said cylinder plug relative to said shell.

52. (previously presented) The lock of claim 51, further comprised of said plug containing a keyway, and said power source being mounted on a key insertable into said keyway.

54. (previously presented) The lock of claim 46, further comprised of:

said cylinder plug containing a keyway;

3 a memory borne by said cylinder plug and storing a code; and  
4 a logic circuit comprising a memory storing a code, said circuit being borne by  
5 said cylinder plug and generating said control signal in dependence upon correspondence  
6 between said code and data borne by a key insertable within said keyway.

1 56. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a plug rotatable around said longitudinal axis while resident within said hollow  
5 recess;

6 an elongate member interposed between said shell and said plug to travel generally  
7 along a radial direction between a first position where said elongate member obstructs rotation  
8 between said shell and said plug by making a direct simultaneous engagement of both said shell  
9 and said plug, and in response to a torque that is externally applied to said plug and causes  
10 rotation of said plug within said shell, exiting said recess and traveling to a second position while  
11 maintaining a second simultaneous engagement of said shell and said plug that accommodates  
12 said rotation;

13 said plug comprising:

14 a first base perforated by an aperture, and a second base separated by an  
15 axial length of said plug from said first base, said second base bearing means for  
16 supporting a cam;

17 a logic circuit borne by said plug and rotatable with said plug, conveying  
18 said data signal between said aperture to said logic circuit; and

19 an electrical operator responding to said control signals by moving  
20 independently of said travel by said elongate member in a second direction within a plane  
21 that maintains said simultaneous engagement but is not aligned with said radial direction  
22 between one of a first orientation obstructing said travel and relative operable movement  
23 between said shell and said plug while said electrical operator is contained wholly within

24 said plug, and a second and different orientation accommodating said travel and said  
25 relative operable movement between said shell and said plug, and another of said first  
26 orientation and said second orientation.

1 64. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a sidebar interposed between said shell and said cylinder plug to travel generally  
9 along a radial plane between a first position engaging both said shell and said plug while  
10 obstructing rotation of said cylinder plug within said recess, and a second position  
11 accommodating said rotation;

12 a logic circuit generating an electrical control signal in response to a comparison  
13 between a code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to said control signal by moving in a  
18 different plane independently of said travel by said sidebar, between one of a first orientation  
19 providing obstruction of said travel and a second and different orientation accommodating said  
20 travel, and another of said first orientation and said second orientation;

21 said sidebar having a first portion that is positioned to be optionally blocked by  
22 another component of said lock functioning independently of said electrical operator to prevent  
23 said travel of said sidebar, and a second portion that is positioned to be blocked from said travel  
24 by said sidebar to said second position whenever said electrical operator is within said first

25 orientation, and a second portion that is positioned to be optionally blocked by another  
26 component of said lock.

1 65. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a bar interposed between said shell and said cylinder plug to travel generally along  
9 a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said  
11 rotation;

12 a logic circuit generating a control signal in response to a comparison between a  
13 code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator comprising an armature, said armature being borne by said  
17 cylinder plug and rotating around said longitudinal axis with said plug, said electrical operator  
18 being electrically operable to respond to said control signal by moving independently of said  
19 travel, between one of a first orientation providing obstruction of said travel and a second and  
20 different orientation accommodating said travel, and another of said first orientation and said  
21 second orientation.

1 66. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to move from one of said first and second orientations to the other

4 of said first and second orientations in response to said control signal.

1 67. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to move from said first orientation to said second orientation in  
4 response to said control signal.

1 68. (previously presented) The lock of claim 65, with electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to rotate around an arc in response to said control signal.

1 69. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to reciprocate along a radial axis that is transverse to said radial  
4 plane in response to said control signal.

1 70. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a bar interposed between said shell and said cylinder plug to travel generally along  
9 a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said  
11 rotation;

12 a logic circuit generating said control signal in response to a comparison between



13 a code set within said logic circuit and a data signal applied to said logic circuit;  
14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and  
16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to an electrical control signal applied  
18 to said electrical operator by moving along a geometrical construct other than to said radial plane  
19 between one of a first orientation providing obstruction of said travel and a second and different  
20 orientation accommodating said travel, and another of said first orientation and said second  
21 orientation.

1 75. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a bar interposed between said shell and said cylinder plug to travel generally along  
9 a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said  
11 rotation;

12 a logic circuit generating a control signal in response to a comparison between a  
13 code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to said control signal by moving along  
18 a radial axis that is transverse to said radial plane, between a first orientation providing

19 obstruction of said travel and a second and different orientation accommodating said travel.

1 76. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a logic circuit generating said control signal in response to a comparison between  
9 a code set within said logic circuit and a data signal applied to said logic circuit;

10 an electrical conductor provided by said plug, conveying said data signal to said  
11 logic circuit;

12 an elongate bar exhibiting a greatest longitudinal dimension along a second axis  
13 that extends transversely to said first base and to said second base, said bar being interposed  
14 between said shell and said cylinder plug to travel generally along a radial axis that is transverse  
15 to said second axis, between a first position engaging both said shell and said plug while  
16 obstructing rotation of said cylinder plug within said recess, and a second position  
17 accommodating said rotation; and

18 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
19 electrical operator being electrically operable to respond to said control signal by moving along  
20 said radial axis between one of a first orientation providing obstruction of said travel and a  
21 second and different orientation accommodating said travel, and another of said first orientation  
22 and said second orientation.

1 77. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a logic circuit generating said control signal in response to a comparison between  
9 a code set within said logic circuit and a data signal applied to said logic circuit;

10 an electrical conductor provided by said plug, conveying said data signal to said  
11 logic circuit;

12 an elongate bar exhibiting a greatest longitudinal dimension along a second axis  
13 that extends transversely to said first base and to said second base, said bar being interposed  
14 between said shell and said cylinder plug to travel generally along a radial axis that is radial to  
15 said cylinder plug and transverse to said second axis, between a first position engaging both said  
16 shell and said plug while obstructing rotation of said cylinder plug within said recess, and a  
17 second position accommodating said rotation; and

18 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
19 electrical operator being electrically operable to respond to a control signal by moving between  
20 one of a first orientation providing obstruction of said travel and a second and different  
21 orientation accommodating said travel, and another of said first orientation and said second  
22 orientation.

1 90. (previously presented) A process of retrofitting a mechanical cylinder lock to form  
2 an electromechanical cylinder lock, the process comprising steps of:

3 providing a mechanical cylinder lock including an outer shell with a bore, a first rotatable  
4 barrel located in the bore, and a side bar for preventing and permitting rotation of the barrel  
5 within the bore in the shell;

6 removing the first barrel from the shell;

7 providing an electronically powered rotatable barrel having an exterior adapted to  
8 substantially correspond to the bore in the shell, and including:

9 at least one electromechanical locking member disposed in the barrel, the  
10 electromechanical locking member being positionable to permit the side bar to engage the  
11 locking member in a non-barrel blocking position which permits the barrel to rotate with respect  
12 to the shell, and the electromechanical locking member also being positionable in a barrel  
13 blocking position which blocks rotation of the barrel with respect to the shell; and

14 an electronically powered drive mechanism cooperating with the electromechanical  
15 locking member to selectively move the locking member from the barrel blocking position to the  
16 non-barrel blocking position in which the side bar engages the locking member to rotate the  
17 barrel and operate the lock; and

18 securing the electronically powered rotatable barrel in the bore in the shell to form an  
19 electromechanical cylinder lock, the lock including control means carried by at least one of the  
20 barrel and bore for energizing the electronically powered drive mechanism in response to an  
21 authorized attempt to open the lock.

1 91. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base perforated by a keyway and a second  
6 base separated by an axial length of said cylinder plug from said first base, said second base  
7 disposed to support a cam;

8 a bar interposed between said shell and said cylinder plug to reciprocate generally  
9 along a radial plane between a first position engaging both said shell and said plug while  
10 obstructing rotation of said cylinder plug within said recess, and a second position  
11 accommodating said rotation when a torque is externally applied to said keyway to rotate said  
12 cylinder plug within said shell;

13 a locking mechanism borne by and rotating with said cylinder plug, said locking  
14 mechanism being interposed between said cylinder plug and said bar, and exhibiting a first

disposition hindering said reciprocation and, in response to insertion of a key in physical conformance to said locking mechanism, exhibiting a second and different disposition accommodating said reciprocation; and

an electrical operator borne by said cylinder plug and rotatable with said cylinder plug, said electrical operator being electrically operable to respond to a control signal by moving independently of said bar between a first orientation providing obstruction of said reciprocation by said bar and a second and different orientation removing said obstruction.

92. (previously presented) A lock, comprising:

a shell containing a hollow recess defining a longitudinal axis and an interior cylindrical surface;

a cylinder plug rotatable around said longitudinal axis while resident within said hollow recess;

a bar interposed between said shell and said cylinder plug to extend generally along a radial plane between a first state engaging both said shell and said plug while obstructing rotation of said cylinder plug within said recess, and a second state accommodating said rotation;

said cylinder plug comprising:

a first base and a second base separated by an axial length of said cylinder plug from said first base, said second base configured to support a cam; and

an electrical operator comprising an armature borne by said cylinder plug and rotatable with said cylinder plug, said electrical operator being electrically operable to respond to a control signal by moving said armature independently of said bar, between one of a first orientation providing obstruction of said rotation during said first state and a second orientation accommodating independent relative movement between said bar and said cylinder plug, and another of said first orientation and said second orientation.

93. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position between  
5 said shell and said cylinder plug, said armature obstructing said rotation absent said conduction,  
6 accommodating said rotation during said conduction, and accommodating said rotation until said  
7 rotation returns said armature to said rest position after termination of said conduction.

1 94. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said  
5 exterior surface extending between said shell and said cylinder plug while said cylinder plug is  
6 in alignment with said shell in a locked condition, said armature obstructing said rotation absent  
7 said conduction, accommodating said rotation during said conduction by withdrawing from said  
8 shell and wholly into said cylinder plug, accommodating said rotation until said rotation returns  
9 said armature to said rest position after termination of said conduction, and resuming said rest  
10 position when said rotation restores said alignment.

1 95. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position between  
5 said bar and said cylinder plug, said armature obstructing said rotation absent said conduction,  
6 said armature accommodating said rotation during said conduction, and said armature  
7 accommodating said rotation until said rotation returns said armature to said rest position after  
8 termination of said conduction.

1 96. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said  
5 first orientation while said exterior surface is interposed between said bar and said cylinder plug  
6 and obstructs said rotation absent said conduction, said armature assuming said second  
7 orientation, withdrawing from said interposition and accommodating said rotation during said  
8 conduction, and said armature accommodating said rotation until said rotation returns said  
9 armature to said rest position with said first orientation after termination of said conduction.

1 97. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said  
5 first orientation while said exterior surface is interposed between said bar and said cylinder plug  
6 and obstructs said rotation absent said conduction, said armature assuming said second  
7 orientation, withdrawing from said interposition and accommodating said rotation during said  
8 conduction, and said armature maintaining said second orientation and accommodating said  
9 rotation after said rotation returns said armature to said rest position after termination of said  
10 conduction.

1 98. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position with said  
5 first orientation while said exterior surface is interposed between said bar and said cylinder plug  
6 and obstructs said rotation absent said conduction, said armature assuming said second  
7 orientation, withdrawing from said interposition and accommodating said rotation during said  
8 conduction, said armature maintaining said second orientation and accommodating said rotation

9 after said rotation returns said armature to said rest position after termination of said conduction,  
10 and said armature resuming said first orientation during renewal of said conduction subsequent  
11 to said termination.

1 99. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position while in  
5 said first orientation absent said conduction with a first thickness of said exterior surface  
6 interposed between said bar and said cylinder plug and with said cylinder plug in alignment with  
7 said shell in a locked position, said armature exhibiting said second orientation and  
8 accommodating said rotation during said conduction with a second and lesser thickness of said  
9 exterior surface permitting movement of said bar relative to said cylinder plug, and said armature  
10 accommodating said rotation until said rotation allows said bar to reverse said relative movement  
11 and said armature to return to said rest position after termination of said conduction.

1 100. (previously presented) The lock of claim 92, further comprised of:

2 a logic circuit borne by said cylinder plug, generating said control signal in  
3 response to a comparison between a code set within said logic circuit and a data signal applied  
4 to said logic circuit; and

5 said electrical operator moving between said second orientation and said first  
6 orientation in response to said control signal.

1 105. (previously presented) The process of claim 90, further comprising:

2 orienting said side bar to travel along a plane that extends approximately radially  
3 relative to said electronically powered rotatable barrel when engaging said locking member; and  
4 positioning said locking member to move on an axis that is approximately  
5 perpendicular to said plane when said locking member is selectively moved from said barrel  
6 blocking position to said non-barrel blocking position.



1 106. (previously presented) The lock of claim 14, further comprising said bar engaging  
2 both said shell and said plug during said movement between said plug and said cylinder.

1 108. (previously presented) The lock of claim 46, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 109. (previously presented) The lock of claim 64, further comprising said sidebar  
2 engaging both said shell and said cylinder plug during said rotation.

1 111. (previously presented) The lock of claim 70, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 112. (previously presented) The lock of claim 75, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 113. (previously presented) The lock of claim 76, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 114. (previously presented) The lock of claim 77, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 115. (previously presented) The lock of claim 85, further comprising said side bar  
2 engaging both said shell and said barrel during said rotation.

1 116. (previously presented) The lock of claim 91, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 119. (previously presented) The lock cylinder of claim 85, in which said side bar moves  
2 out of the cavity and engages the locking member to rotate the barrel and operate the lock.

1 120. (previously presented) A rotatable lock barrel for insertion into a lock cylinder  
2 having a bore formed therein, the barrel comprising:

3 an elongated, generally cylindrically shaped barrel member having an exterior configured  
4 for receipt in a bore of a lock cylinder and an interior containing a plurality of electromechanical  
5 locking members, the barrel member having a recess formed therein;

6 wherein the locking members are disposed in the recess of the barrel member and are  
7 substantially entirely contained within the barrel member, each of the locking members including  
8 a groove and the locking members being movable to a position in which the grooves of the  
9 locking members are aligned;

10 the recess in said barrel member being configured to receive at least a portion of a  
11 movable side bar of a lock cylinder to permit the side bar to move into and out of engagement  
12 with the grooves of the locking members for selectively permitting and blocking rotation of the  
13 barrel member with respect to a lock cylinder when positioned therein;

14 an electronically powered drive mechanism located within the barrel member for moving  
15 the electromechanical locking members to a position in which the grooves of the locking  
16 members are aligned.

1 121. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6 a bar interposed between said shell and said cylinder plug detent extending radially  
7 from a second recess within said shell into a passage within said cylinder plug to create an  
8 obstruction to rotation of said cylinder plug within said hollow recess;

9           said cylinder plug comprising:

10           a first base and a second base separated by an axial length of said cylinder plug  
11           from said first base, said second base configured to support a cam; and

12           an electrical operator borne by said cylinder plug and rotatable with said cylinder  
13           plug, said electrical operator being electrically operable to respond to a control signal by  
14           moving independently of said detent between one of a first orientation accommodating  
15           relative movement between said detent and said cylinder plug and a second and different  
16           orientation maintaining obstruction of said relative movement by engaging said detent,  
          and another of said first orientation and said second orientation.

**X. APPENDIX II:**

**Claims Under Appeal Claims Under Appeal Upon Entry Of Amendment To Claim 14**

**Claims 1-24, 34-38, 46-52, 54, 56, 64-70, 75-77, 90-100, 105, 106, 108, 109, 111-116, 119-121**

1. (previously presented) A plug, comprising:

a first base bearing a keyway providing a first electrical conductor and an orifice spaced-apart from and separated by a mass of said plug from said keyway;

a second base separated by an axial length of said plug from said first base, said second base disposed to support a cam, said mass being perforated by a plurality of radially oriented apertures forming an array;

an exterior surface extending between and engaging said first base and said second base;

a sidebar positioned between said first base and said second base to reciprocate between a first location with said sidebar simultaneously engaging said plug and a cylinder surrounding said plug, and a second location releasing said plug for relative movement between the cylinder and said plug;

a locking mechanism disposed within said apertures to move relative to said plug in response to a key inserted into said keyway to accommodate reciprocation of said sidebar relative to said plug and rotation of said plug relative to the cylinder when the key while inserted into said keyway engages in a selected relation with said locking mechanism, and obstructing said reciprocation absent said selected relation;

a second electrical conductor terminating with an electrical contact exposed to an exterior of said first base through said orifice;

an electronic logic circuit borne by said plug while coupled to receive electrical data signals via said first and second electrical conductors, and generating control signals in dependence upon said electrical power and data signals; and

an electrical operator disposed within one of said apertures, said operator having a distal member traveling in dependence upon said control signals between a first position relative to said exterior surface obstructing said relative movement by engaging a detent protruding from the cylinder, and a second and different position relative to said exterior surface accommodating said relative movement.

1           2. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator simultaneously experiencing said rotation relative to the cylinder  
3 whenever said plug rotates relative to the cylinder.

1           3. (previously presented) The plug of claim 1, comprising said locking mechanism, logic  
2 circuit and electrical operator being wholly within the cylinder and travelling with said plug  
3 whenever said plug moves relative to the cylinder.

1           4. (previously presented) The plug of claim 1, with said electrical operator maintaining  
2 said distal member within said plug with said distal member extended not beyond said exterior  
3 surface while said distal member is in said first position, and maintaining said distal member in  
4 concurrent engagement with said plug and with the detent while said distal member is in said  
5 first position.

1           5. (previously presented) The plug of claim 1, with said electrical operator maintaining  
2 said distal member within said plug with said distal member extending not beyond said exterior  
3 surface while said distal member is in said first position, and moving said distal member radially  
4 between relative to said exterior surface in dependence upon said control signals.

1           6. (previously presented) A lock, comprising:  
2               a cylinder containing a hollow recess defining a longitudinal axis and a stationary  
3 detent extending from said cylinder;

4 a plug bearing a plurality of open radially oriented apertures forming an array, said  
5 plug being rotatable around said longitudinal axis while resident within said hollow recess, said  
6 plug comprising:

7 a first base bearing a keyway providing a first electrical conductor and an  
8 orifice spaced-apart from and separated by a mass of said plug from said keyway;

9 a second base separated by an axial length of said plug from said first base,  
10 said second base disposed to support a cam;

11 an exterior surface extending between and engaging said first base and said  
12 second base;

13 a sidebar positioned between said first base and said second base to create an  
14 obstruction to relative movement between said cylinder and said plug;

15 a locking device disposed within said apertures to release an obstruction when the  
16 key while inserted into said keyway engages in a selected relation with said locking device, and  
17 to maintain said obstruction absent said selected relation;

18 a second electrical conductor terminating with an electrical contact exposed to an  
19 exterior of said first base through said orifice;

20 an electronic logic circuit borne by said plug, coupled to receive electrical data  
21 signals via said first and second electrical conductors, and generating control signals in  
22 dependence upon said electrical power and data signals; and

23 an electrical operator borne by said plug, disposed within one of said apertures,  
24 said operator having a distal member radially traveling along an axis transverse to said  
25 longitudinal axis, in dependence upon said control signals between a first position relative to said  
26 exterior surface by engaging said detent and thereby obstructing said movement in concert with  
27 said locking device and a second and different position relative to said exterior surface  
28 accommodating said movement.

1 7. (previously presented) The plug of claim 6, comprising said locking device, logic  
2 circuit and electrical operator simultaneously experiencing said rotation relative to the cylinder

whenever said plug rotates relative to the cylinder.

8. (previously presented) The plug of claim 6, comprising said locking device, logic circuit and electrical operator being wholly within the cylinder and travelling with said plug whenever said plug moves relative to the cylinder.

9. (previously presented) The plug of claim 6, with said electrical operator maintaining said distal member within said plug with said distal member extended not beyond said exterior surface while said distal member is in said second position, and maintaining said distal member in engagement with said detent while said distal member is in said first position.

10. (previously presented) The plug of claim 6, with said electrical operator maintaining said distal member within said plug with said distal member extending not beyond said exterior surface while said distal member is in said first position.

11. (previously presented) A lock, comprising:

- a shell containing a hollow recess defining a longitudinal axis and an interior cylindrical surface, said shell bearing a detent extending into said shell;
- a plug rotatable around said longitudinal axis while resident within said hollow recess, and a bar interposed between said shell and said plug generally along a radial plane engaging both said shell and said plug while obstructing rotation of said plug within said recess, said plug comprising:
  - a first base providing a first electrical conductor;
  - a second base separated by an axial length of said plug from said first base;
  - an exterior surface extending between and engaging said first base and said second base;
  - a locking device responsive to a key inserted into said keyway accommodating relative movement between said shell and said plug when the key while

14 inserted into said keyway engages in a selected relation with said locking device and  
15 obstructing said relative movement absent said selected relation;

16 a second electrical conductor terminating with an electrical contact exposed  
17 to an exterior of said first base through said orifice;

18 an electronic logic circuit coupled to receive electrical data signals via said  
19 first and second electrical conductors, and generating control signals in dependence upon  
20 said data signals; and

21 an electrical operator having a distal member moving relative to said  
22 detent, in dependence upon said control signals between a first orientation relative to said  
23 exterior surface enabling said relative movement and a second and different orientation  
24 relative to said exterior surface obstructing said relative movement when said distal  
25 member at least partially surrounds said detent.

1 12. (previously presented) The plug of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in  
4 response to said control signals; and

5 said distal member bearing a circumferential surface blocking said relative  
6 movement while said distal member is in said second position, and a variation in said  
7 circumferential surface accommodating said relative movement while said distal member is in  
8 said first position.

1 13. (previously presented) The plug of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil coaxially aligned with said distal  
3 member, to move said distal member between said second position and said first position in  
4 response to said control signals; and

5 distal member bearing a circumferential surface engaging said detent while said  
6 distal member is in said second position, and a variation in said circumferential surface



7 accommodating said relative movement while said distal member is in said first position.

1 14. (previously presented) A lock, comprising:

2 a cylinder containing a hollow interior recess defining a longitudinal axis, and  
3 bearing a slot within said recess; and

4 a plug rotatable from a rest orientation around said longitudinal axis while resident  
5 within said hollow recess relative to said cylinder; and

6 a stationary detent positioned between a first end and second end while extending  
7 into said slot, and providing simultaneous engagement of said cylinder and said plug while said  
8 cylinder remains in said rest orientation;

9 said plug comprising:

10 a first base bearing an opening accommodating insertion of a key and  
11 providing a first electrical conductor;

12 a second base separated by an axial length of said plug from said first base,  
13 said second base disposed to support a cam, said plug being perforated by a an aperture;

14 an exterior surface extending between said first base and said second base;  
15 retaining means oriented to retain a shank of a key inserted into said  
16 opening while said plug remains in an orientation other than said rest orientation relative  
17 to said cylinder, and to accommodate reversal of the key from said opening while said  
18 plug is in said rest orientation;

19 a second electrical conductor terminating with an electrical contact exposed  
20 to an exterior of said first base through said orifice;

21 an electronic logic circuit comprising a memory storing a code, said circuit  
22 being borne by said plug and coupled to receive electrical data signals via said first and  
23 second electrical conductors, said circuit generating control signals in dependence upon  
24 correspondence between said code and information borne by said data signals; and

25 an electrical operator borne by said plug, said operator having a distal  
26 member travelling in dependence upon said control signals between a first position

27 relative to said exterior surface maintaining engagement of said detent and a second and  
28 different position relative to said exterior surface accommodating movement between  
29 said plug and said cylinder.

1 15. (previously presented) The lock of claim 14, further comprising:  
2 said detent being borne by said cylinder; and  
3 said distal member being oriented within said plug to move relative to said plug  
4 to accommodate rotation of said plug from said rest orientation relative to the cylinder when a  
5 key while inserted into said opening generates said data signals representing information having  
6 a selected said correspondence with said code, and obstructing said rotation absent said selected  
7 correspondence.

1 16. (previously presented) The lock of claim 14, further comprising:  
2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and  
4 said distal member being oriented within said plug to move relative to said plug  
5 to accommodate passage of said tooth relative to said distal member during rotation of said plug  
6 from said rest orientation relative to the cylinder when a key while inserted into said opening  
7 generates said data signals representing information having a selected said correspondence with  
8 said code, and obstructing said rotation of said plug from said rest orientation by engaging said  
9 tooth absent said selected correspondence.

1 17. (previously presented) The lock of claim 14, further comprising:  
2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and  
4 said distal member being oriented within said plug to move relative to said plug  
5 to accommodate passage of said tooth relative to said distal member during rotation of said plug  
6 from said rest orientation relative to the cylinder when a key while inserted into said opening

7 generates said data signals representing information having a selected said correspondence with  
8 said code, obstructing said rotation of said plug from said rest orientation by engaging said tooth  
9 absent said selected correspondence, and accommodating passage of said tooth relative to said  
10 distal member during rotation of said plug from an orientation other than said rest orientation  
11 to said rest orientation.

1 18. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug to move relative to said plug  
5 to accommodate passage of said tooth relative to said distal member during rotation of said plug  
6 from said rest orientation relative to the cylinder when a key while inserted into said opening  
7 generates said data signals representing information having a selected said correspondence with  
8 said code, and obstructing said rotation of said plug from said rest orientation by engaging said  
9 tooth absent said selected correspondence when said rotation is in a first direction, and  
10 accommodating said rotation of said plug from said rest orientation despite an absence of said  
11 selected correspondence when said rotation is in a second and opposite direction.

1 19. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug in an engagement of said tooth  
5 to obstruct said rotation of said plug from said rest orientation, and to move relative to said plug  
6 from said engagement of said tooth obstructing said rotation of said plug from said rest  
7 orientation to an accommodation of passage of said tooth relative to said distal member during  
8 rotation of said plug from said rest orientation relative to the cylinder when a key while inserted  
9 into said opening generates said data signals representing information having a selected said  
10 correspondence with said code, and continuing said accommodation despite intermittent removal

11 of the key from said opening.

1 20. (previously presented) The lock of claim 14, further comprising:

2 said detent comprising an arm arcuately engaging said cylinder and a tooth  
3 extending from said arm and through said slot; and

4 said distal member being oriented within said plug in an engagement of said tooth  
5 to obstruct said rotation of said plug from said rest orientation, and to move relative to said plug  
6 from said engagement of said tooth obstructing said rotation of said plug from said rest  
7 orientation to an accommodation of passage of said tooth relative to said distal member during  
8 rotation of said plug from said rest orientation relative to the cylinder when a key while inserted  
9 into said keyway generates said data signals representing information having a selected said  
10 correspondence with said code, and continuing said accommodation despite intermittent removal  
11 of the key from said opening absent subsequent said generation of data signals representing  
12 information having said selected correspondence with said code.

1 21. (previously presented) The lock of claim 16, further comprising:

2 a sidebar positioned between said first base and said second base to provide  
3 reciprocation between a first location with said sidebar providing simultaneous engagement with  
4 said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5 cylinder; and

6 said electrical operator comprising an electrical solenoid borne by said plug, said  
7 distal member comprising an armature travelling in dependence upon said control signals  
8 between a third position relative to said exterior surface maintaining said simultaneous  
9 engagement and a fourth and different position relative to said exterior surface accommodating  
10 said reciprocation.

1 22. (previously presented) The lock of claim 17, further comprising:

2 a sidebar positioned between said first base and said second base to provide

3       reciprocation between a first location with said sidebar providing simultaneous engagement with  
4       said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5       cylinder; and

6               said electrical operator comprising an electrical solenoid borne by said plug, said  
7       distal member comprising an armature travelling in dependence upon said control signals  
8       between a third position relative to said exterior surface maintaining said simultaneous  
9       engagement and a fourth and different position relative to said exterior surface accommodating  
10      said reciprocation.

1           23. (previously presented) The lock of claim 18, further comprising:

2               a sidebar positioned between said first base and said second base to provide  
3       reciprocation between a first location with said sidebar providing simultaneous engagement with  
4       said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5       cylinder; and

6               said electrical operator comprising an electrical solenoid borne by said plug, said  
7       distal member comprising an armature travelling in dependence upon said control signals  
8       between a third position relative to said exterior surface maintaining said simultaneous  
9       engagement and a fourth and different position relative to said exterior surface accommodating  
10      said reciprocation.

1           24. (previously presented) The lock of claim 19, further comprising:

2               a sidebar positioned between said first base and said second base to provide  
3       reciprocation between a first location with said sidebar providing simultaneous engagement with  
4       said plug and said cylinder, and a second location releasing said plug for rotation relative to the  
5       cylinder; and

6               said electrical operator comprising an electrical solenoid borne by said plug, said  
7       member comprising an distal armature travelling in dependence upon said control signals  
8       between a third position relative to said exterior surface maintaining said simultaneous

9 engagement and a fourth and different position relative to said exterior surface accommodating  
10 said reciprocation.

1 34. (previously presented) The lock of claim 1, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response  
4 to said control signals; and

5 said distal member bearing a circumferential surface blocking said radial  
6 movement of said sidebar while said distal member is in said second position, and  
7 accommodating said radial movement while said distal member is in said first position.

1 35. (previously presented) The lock of claim 6, further comprised of said:

2 electrical operator comprising an electrical coil moving said distal member, to  
3 reciprocate said distal member between said first position and said second position in response  
4 to said control signals; and

5 said distal member bearing a circumferential surface blocking said radial  
6 movement of said sidebar while said distal member is in said second position, and  
7 accommodating said radial movement while said distal member is in said first position.

1 36. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass engaging said detent and blocking said rotation while said distal member is in  
3 said first position, and a groove through said mass accommodating relative passage between said  
4 distal member relative to said detent while said distal member is in said second position.

1 37. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass exhibiting a first height accommodating relative passage between said distal  
3 member relative to said detent while said distal member is in said second position, and a second  
4 and greater height engaging and blocking said rotation while said distal member is in said first

5 position.

1 38. (previously presented) The lock of claim 16, further comprising said distal member  
2 bearing a mass having a periphery engaging said detent and blocking said rotation while said  
3 distal member is in said first position, and a central variation in said mass relative to said  
4 periphery accommodating relative passage between said distal member and said detent while said  
distal member is in said second position.

1 46. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;  
6 a bar borne by said plug and rotatable with said plug relative to said shell, said bar  
7 being interposed between said shell and said cylinder plug to reciprocate generally along a radial  
8 plane between a first position engaging both said shell and said cylinder plug while obstructing  
9 rotation of said cylinder plug within said recess, and a second position accommodating said  
10 rotation, said cylinder plug comprising:  
11 a first base and a second base separated by an axial length of said plug from said  
12 first base, said second base bearing means for supporting a cam; and  
13 an electrical operator being electrically operable to respond to an electrical control  
14 signal by obstructing movement of said bar between said first position and said second position  
15 in response to a first state of said control signal and by moving within a second and different  
16 plane not coextensive with said radial plane in response to application of said control signal to  
17 accommodate said movement of said bar in response to a second and different state of said  
18 control signal.

1 47. (previously presented) The lock of claim 46, further comprised of said operator

2 directly obstructing movement of said bar between said first position and said second position  
3 absent said control signal.

1 48. (previously presented) The lock of claim 46, further comprised of:

2 a logic circuit borne by said cylinder plug generating said control signal in  
3 response to a comparison between a code set within said logic circuit and a data signal applied  
4 to said logic circuit; and

5 said electrical operator moving to accommodate said movement by said bar in  
6 response to said control signal.

1 49. (previously presented) The lock of claim 46, further comprised of a locking  
2 mechanism borne by said cylinder plug, said cylinder plug being perforated by an aperture  
3 admitting reciprocal travel of a key relative to said locking mechanism, and said locking  
4 mechanism obstructing movement of said cylinder plug relative to said shell absent the key  
5 exhibiting a selected relation with said locking mechanism.

1 50. (previously presented) The lock of claim 46, further comprised of a plurality of  
2 electrical conductors borne by said lock to engage a circuit in a key inserted into said cylinder  
3 plug.

1 51. (previously presented) The lock of claim 46, further comprised of a power source  
2 energizing said electric operator to move during said second and different state of said control  
3 signal, positioned to rotate with said cylinder plug relative to said shell.

1 52. (previously presented) The lock of claim 51, further comprised of said plug  
2 containing a keyway, and said power source being mounted on a key insertable into said keyway.

1 54. (previously presented) The lock of claim 46, further comprised of:



2           said cylinder plug containing a keyway;  
3           a memory borne by said cylinder plug and storing a code; and  
4           a logic circuit comprising a memory storing a code, said circuit being borne by  
5   said cylinder plug and generating said control signal in dependence upon correspondence  
6   between said code and data borne by a key insertable within said keyway.

1           56. (previously presented) A lock, comprising:

2           a shell containing a hollow recess defining a longitudinal axis and an interior  
3   cylindrical surface;

4           a plug rotatable around said longitudinal axis while resident within said hollow  
5   recess;

6           an elongate member interposed between said shell and said plug to travel generally  
7   along a radial direction between a first position where said elongate member obstructs rotation  
8   between said shell and said plug by making a direct simultaneous engagement of both said shell  
9   and said plug, and in response to a torque that is externally applied to said plug and causes  
10   rotation of said plug within said shell, exiting said recess and traveling to a second position while  
11   maintaining a second simultaneous engagement of said shell and said plug that accommodates  
12   said rotation;

13          said plug comprising:

14               a first base perforated by an aperture, and a second base separated by an  
15   axial length of said plug from said first base, said second base bearing means for  
16   supporting a cam;

17               a logic circuit borne by said plug and rotatable with said plug, conveying  
18   said data signal between said aperture to said logic circuit; and

19               an electrical operator responding to said control signals by moving  
20   independently of said travel by said elongate member in a second direction within a plane  
21   that maintains said simultaneous engagement but is not aligned with said radial direction  
22   between one of a first orientation obstructing said travel and relative operable movement

23 between said shell and said plug while said electrical operator is contained wholly within  
24 said plug, and a second and different orientation accommodating said travel and said  
25 relative operable movement between said shell and said plug, and another of said first  
26 orientation and said second orientation.

1 64. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a sidebar interposed between said shell and said cylinder plug to travel generally  
9 along a radial plane between a first position engaging both said shell and said plug while  
10 obstructing rotation of said cylinder plug within said recess, and a second position  
11 accommodating said rotation;

12 a logic circuit generating an electrical control signal in response to a comparison  
13 between a code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to said control signal by moving in a  
18 different plane independently of said travel by said sidebar, between one of a first orientation  
19 providing obstruction of said travel and a second and different orientation accommodating said  
20 travel, and another of said first orientation and said second orientation;

21 said sidebar having a first portion that is positioned to be optionally blocked by  
22 another component of said lock functioning independently of said electrical operator to prevent  
23 said travel of said sidebar, and a second portion that is positioned to be blocked from said travel

24 by said sidebar to said second position whenever said electrical operator is within said first  
25 orientation, and a second portion that is positioned to be optionally blocked by another  
26 component of said lock.

1 65. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a bar interposed between said shell and said cylinder plug to travel generally along  
9 a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said  
11 rotation;

12 a logic circuit generating a control signal in response to a comparison between a  
13 code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator comprising an armature, said armature being borne by said  
17 cylinder plug and rotating around said longitudinal axis with said plug, said electrical operator  
18 being electrically operable to respond to said control signal by moving independently of said  
19 travel, between one of a first orientation providing obstruction of said travel and a second and  
20 different orientation accommodating said travel, and another of said first orientation and said  
21 second orientation.

1 66. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and

3 wound to drive said armature to move from one of said first and second orientations to the other  
4 of said first and second orientations in response to said control signal.

1 67. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to move from said first orientation to said second orientation in  
4 response to said control signal.

1 68. (previously presented) The lock of claim 65, with electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to rotate around an arc in response to said control signal.

1 69. (previously presented) The lock of claim 65, with said electrical operator further  
2 comprising a coil of an electrically conducting material that is borne by said cylinder plug and  
3 wound to drive said armature to reciprocate along a radial axis that is transverse to said radial  
4 plane in response to said control signal.

1 70. (previously presented) A lock, comprising:  
2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;  
4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;  
8 a bar interposed between said shell and said cylinder plug to travel generally along  
9 a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said  
11 rotation;

12 a logic circuit generating said control signal in response to a comparison between  
13 a code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to an electrical control signal applied  
18 to said electrical operator by moving along a geometrical construct other than to said radial plane  
19 between one of a first orientation providing obstruction of said travel and a second and different  
20 orientation accommodating said travel, and another of said first orientation and said second  
21 orientation.

1 75. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a bar interposed between said shell and said cylinder plug to travel generally along  
9 a radial plane between a first position engaging both said shell and said plug while obstructing  
10 rotation of said cylinder plug within said recess, and a second position accommodating said  
11 rotation;

12 a logic circuit generating a control signal in response to a comparison between a  
13 code set within said logic circuit and a data signal applied to said logic circuit;

14 an electrical conductor provided by said plug, conveying said data signal to said  
15 logic circuit; and

16 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
17 electrical operator being electrically operable to respond to said control signal by moving along

18 a radial axis that is transverse to said radial plane, between a first orientation providing  
19 obstruction of said travel and a second and different orientation accommodating said travel.

1 76. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a logic circuit generating said control signal in response to a comparison between  
9 a code set within said logic circuit and a data signal applied to said logic circuit;

10 an electrical conductor provided by said plug, conveying said data signal to said  
11 logic circuit;

12 an elongate bar exhibiting a greatest longitudinal dimension along a second axis  
13 that extends transversely to said first base and to said second base, said bar being interposed  
14 between said shell and said cylinder plug to travel generally along a radial axis that is transverse  
15 to said second axis, between a first position engaging both said shell and said plug while  
16 obstructing rotation of said cylinder plug within said recess, and a second position  
17 accommodating said rotation; and

18 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
19 electrical operator being electrically operable to respond to said control signal by moving along  
20 said radial axis between one of a first orientation providing obstruction of said travel and a  
21 second and different orientation accommodating said travel, and another of said first orientation  
22 and said second orientation.

1 77. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior

3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base and a second base separated by an axial  
6 length of said cylinder plug from said first base, said second base bearing means for supporting  
7 a cam;

8 a logic circuit generating said control signal in response to a comparison between  
9 a code set within said logic circuit and a data signal applied to said logic circuit;

10 an electrical conductor provided by said plug, conveying said data signal to said  
11 logic circuit;

12 an elongate bar exhibiting a greatest longitudinal dimension along a second axis  
13 that extends transversely to said first base and to said second base, said bar being interposed  
14 between said shell and said cylinder plug to travel generally along a radial axis that is radial to  
15 said cylinder plug and transverse to said second axis, between a first position engaging both said  
16 shell and said plug while obstructing rotation of said cylinder plug within said recess, and a  
17 second position accommodating said rotation; and

18 an electrical operator borne by said cylinder plug and rotatable with said plug, said  
19 electrical operator being electrically operable to respond to a control signal by moving between  
20 one of a first orientation providing obstruction of said travel and a second and different  
21 orientation accommodating said travel, and another of said first orientation and said second  
22 orientation.

1 90. (previously presented) A process of retrofitting a mechanical cylinder lock to form  
2 an electromechanical cylinder lock, the process comprising steps of:

3 providing a mechanical cylinder lock including an outer shell with a bore, a first rotatable  
4 barrel located in the bore, and a side bar for preventing and permitting rotation of the barrel  
5 within the bore in the shell;

6 removing the first barrel from the shell;

7 providing an electronically powered rotatable barrel having an exterior adapted to

8 substantially correspond to the bore in the shell, and including:

9 at least one electromechanical locking member disposed in the barrel, the  
10 electromechanical locking member being positionable to permit the side bar to engage the  
11 locking member in a non-barrel blocking position which permits the barrel to rotate with respect  
12 to the shell, and the electromechanical locking member also being positionable in a barrel  
13 blocking position which blocks rotation of the barrel with respect to the shell; and

14 an electronically powered drive mechanism cooperating with the electromechanical  
15 locking member to selectively move the locking member from the barrel blocking position to the  
16 non-barrel blocking position in which the side bar engages the locking member to rotate the  
17 barrel and operate the lock; and

18 securing the electronically powered rotatable barrel in the bore in the shell to form an  
19 electromechanical cylinder lock, the lock including control means carried by at least one of the  
20 barrel and bore for energizing the electronically powered drive mechanism in response to an  
21 authorized attempt to open the lock.

1 91. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess, said cylinder plug comprising a first base perforated by a keyway and a second  
6 base separated by an axial length of said cylinder plug from said first base, said second base  
7 disposed to support a cam;

8 a bar interposed between said shell and said cylinder plug to reciprocate generally  
9 along a radial plane between a first position engaging both said shell and said plug while  
10 obstructing rotation of said cylinder plug within said recess, and a second position  
11 accommodating said rotation when a torque is externally applied to said keyway to rotate said  
12 cylinder plug within said shell;

13 a locking mechanism borne by and rotating with said cylinder plug, said locking



14 mechanism being interposed between said cylinder plug and said bar, and exhibiting a first  
15 disposition hindering said reciprocation and, in response to insertion of a key in physical  
16 conformance to said locking mechanism, exhibiting a second and different disposition  
17 accommodating said reciprocation; and

18 an electrical operator borne by said cylinder plug and rotatable with said cylinder  
19 plug, said electrical operator being electrically operable to respond to a control signal by moving  
20 independently of said bar between a first orientation providing obstruction of said reciprocation  
21 by said bar and a second and different orientation removing said obstruction.

1 92. (previously presented) A lock, comprising:

2 a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4 a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6 a bar interposed between said shell and said cylinder plug to extend generally  
7 along a radial plane between a first state engaging both said shell and said plug while obstructing  
8 rotation of said cylinder plug within said recess, and a second state accommodating said rotation;

9 said cylinder plug comprising:

10 a first base and a second base separated by an axial length of said cylinder plug  
11 from said first base, said second base configured to support a cam; and

12 an electrical operator comprising an armature borne by said cylinder plug and  
13 rotatable with said cylinder plug, said electrical operator being electrically operable to  
14 respond to a control signal by moving said armature independently of said bar, between  
15 one of a first orientation providing obstruction of said rotation during said first state and  
16 a second orientation accommodating independent relative movement between said bar  
17 and said cylinder plug, and another of said first orientation and said second orientation.

1           93. (previously presented) The lock of claim 92, further comprised of:

2                 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4                 said armature comprising an exterior surface exhibiting a rest position between  
5 said shell and said cylinder plug, said armature obstructing said rotation absent said conduction,  
6 accommodating said rotation during said conduction, and accommodating said rotation until said  
7 rotation returns said armature to said rest position after termination of said conduction.

1           94. (previously presented) The lock of claim 92, further comprised of:

2                 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4                 said armature comprising an exterior surface exhibiting a rest position with said  
5 exterior surface extending between said shell and said cylinder plug while said cylinder plug is  
6 in alignment with said shell in a locked condition, said armature obstructing said rotation absent  
7 said conduction, accommodating said rotation during said conduction by withdrawing from said  
8 shell and wholly into said cylinder plug, accommodating said rotation until said rotation returns  
9 said armature to said rest position after termination of said conduction, and resuming said rest  
10 position when said rotation restores said alignment.

1           95. (previously presented) The lock of claim 92, further comprised of:

2                 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4                 said armature comprising an exterior surface exhibiting a rest position between  
5 said bar and said cylinder plug, said armature obstructing said rotation absent said conduction,  
6 said armature accommodating said rotation during said conduction, and said armature  
7 accommodating said rotation until said rotation returns said armature to said rest position after  
8 termination of said conduction.

1           96. (previously presented) The lock of claim 92, further comprised of:

2                   a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4                   said armature comprising an exterior surface exhibiting a rest position with said  
5 first orientation while said exterior surface is interposed between said bar and said cylinder plug  
6 and obstructs said rotation absent said conduction, said armature assuming said second  
7 orientation, withdrawing from said interposition and accommodating said rotation during said  
8 conduction, and said armature accommodating said rotation until said rotation returns said  
9 armature to said rest position with said first orientation after termination of said conduction.

1           97. (previously presented) The lock of claim 92, further comprised of:

2                   a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4                   said armature comprising an exterior surface exhibiting a rest position with said  
5 first orientation while said exterior surface is interposed between said bar and said cylinder plug  
6 and obstructs said rotation absent said conduction, said armature assuming said second  
7 orientation, withdrawing from said interposition and accommodating said rotation during said  
8 conduction, and said armature maintaining said second orientation and accommodating said  
9 rotation after said rotation returns said armature to said rest position after termination of said  
10 conduction.

1           98. (previously presented) The lock of claim 92, further comprised of:

2                   a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4                   said armature comprising an exterior surface exhibiting a rest position with said  
5 first orientation while said exterior surface is interposed between said bar and said cylinder plug  
6 and obstructs said rotation absent said conduction, said armature assuming said second  
7 orientation, withdrawing from said interposition and accommodating said rotation during said

8 conduction, said armature maintaining said second orientation and accommodating said rotation  
9 after said rotation returns said armature to said rest position after termination of said conduction,  
10 and said armature resuming said first orientation during renewal of said conduction subsequent  
11 to said termination.

1 99. (previously presented) The lock of claim 92, further comprised of:

2 a coil wound to provide conduction of an electrical current in response to said  
3 control signal; and

4 said armature comprising an exterior surface exhibiting a rest position while in  
5 said first orientation absent said conduction with a first thickness of said exterior surface  
6 interposed between said bar and said cylinder plug and with said cylinder plug in alignment with  
7 said shell in a locked position, said armature exhibiting said second orientation and  
8 accommodating said rotation during said conduction with a second and lesser thickness of said  
9 exterior surface permitting movement of said bar relative to said cylinder plug, and said armature  
10 accommodating said rotation until said rotation allows said bar to reverse said relative movement  
11 and said armature to return to said rest position after termination of said conduction.

1 100. (previously presented) The lock of claim 92, further comprised of:

2 a logic circuit borne by said cylinder plug, generating said control signal in  
3 response to a comparison between a code set within said logic circuit and a data signal applied  
4 to said logic circuit; and

5 said electrical operator moving between said second orientation and said first  
6 orientation in response to said control signal.

1 105. (previously presented) The process of claim 90, further comprising:

2 orienting said side bar to travel along a plane that extends approximately radially  
3 relative to said electronically powered rotatable barrel when engaging said locking member; and

4 positioning said locking member to move on an axis that is approximately  
5 perpendicular to said plane when said locking member is selectively moved from said barrel

6 blocking position to said non-barrel blocking position.

1 106. (previously presented) The lock of claim 14, further comprising said bar engaging  
2 both said shell and said plug during said movement between said plug and said cylinder.

1 108. (previously presented) The lock of claim 46, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 109. (previously presented) The lock of claim 64, further comprising said sidebar  
2 engaging both said shell and said cylinder plug during said rotation.

1 111. (previously presented) The lock of claim 70, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 112. (previously presented) The lock of claim 75, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 113. (previously presented) The lock of claim 76, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 114. (previously presented) The lock of claim 77, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1 115. (previously presented) The lock of claim 85, further comprising said side bar  
2 engaging both said shell and said barrel during said rotation.

1 116. (previously presented) The lock of claim 91, further comprising said bar engaging  
2 both said shell and said cylinder plug during said rotation.

1           119. (previously presented) The lock cylinder of claim 85, in which said side bar moves  
2 out of the cavity and engages the locking member to rotate the barrel and operate the lock.

1           120. (previously presented) A rotatable lock barrel for insertion into a lock cylinder  
2 having a bore formed therein, the barrel comprising:

3           an elongated, generally cylindrically shaped barrel member having an exterior configured  
4 for receipt in a bore of a lock cylinder and an interior containing a plurality of electromechanical  
5 locking members, the barrel member having a recess formed therein;

6           wherein the locking members are disposed in the recess of the barrel member and are  
7 substantially entirely contained within the barrel member, each of the locking members including  
8 a groove and the locking members being movable to a position in which the grooves of the  
9 locking members are aligned;

10          the recess in said barrel member being configured to receive at least a portion of a  
11 movable side bar of a lock cylinder to permit the side bar to move into and out of engagement  
12 with the grooves of the locking members for selectively permitting and blocking rotation of the  
13 barrel member with respect to a lock cylinder when positioned therein;

14          an electronically powered drive mechanism located within the barrel member for moving  
15 the electromechanical locking members to a position in which the grooves of the locking  
16 members are aligned.

1           121. (previously presented) A lock, comprising:

2           a shell containing a hollow recess defining a longitudinal axis and an interior  
3 cylindrical surface;

4           a cylinder plug rotatable around said longitudinal axis while resident within said  
5 hollow recess;

6           a bar interposed between said shell and said cylinder plug detent extending radially  
7 from a second recess within said shell into a passage within said cylinder plug to create an

8 obstruction to rotation of said cylinder plug within said hollow recess;

9 said cylinder plug comprising:

10 a first base and a second base separated by an axial length of said cylinder plug  
11 from said first base, said second base configured to support a cam; and

12 an electrical operator borne by said cylinder plug and rotatable with said cylinder  
13 plug, said electrical operator being electrically operable to respond to a control signal by  
14 moving independently of said detent between one of a first orientation accommodating  
15 relative movement between said detent and said cylinder plug and a second and different  
16 orientation maintaining obstruction of said relative movement by engaging said detent,  
and another of said first orientation and said second orientation.